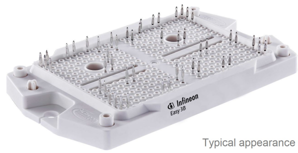
Final datasheet

EasyPACK™ module with TRENCHSTOP™IGBT7 and emitter controlled 7 diode and PressFIT / NTC

Features



- Electrical features
  - V_{CES} = 1200 V
  - $I_{C\ nom}$ = 340 A / I_{CRM} = 680 A
  - Ultra fast IGBT chips
  - Low inductive design
  - Low switching losses
  - Low $V_{CE,sat}$
  - Suitable Infineon gate drivers can be found under https://www.infineon.com/gdfinder
- Mechanical features
  - 3.2 kV AC 1 minute insulation
  - Al_2O_3 substrate with low thermal resistance
  - High current pin
  - PressFIT contact technology
  - Rugged mounting due to integrated mounting clamps

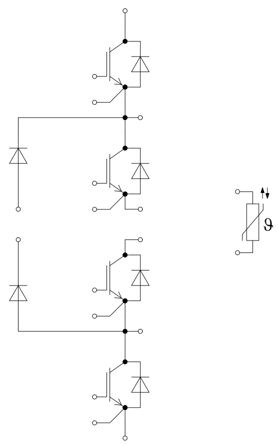
Potential applications

- Three-level applications
- Solar applications

Product validation

- Qualified for industrial applications according to the relevant tests of IEC 60747, 60749 and 60068

Description



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1 Package

Table 1 Insulation coordination

Parameter	Symbol	Note or test condition	Values	Unit
Isolation test voltage	V_{ISOL}	RMS, f = 50 Hz, t = 1 min	3.2	kV
Isolation test voltage NTC	$V_{ISOL(NTC)}$	RMS, f = 50 Hz, t = 1 min	3.2	kV
Internal isolation		basic insulation (class 1, IEC 61140)	Al_2O_3	
Comparative tracking index	*CTI*		> 400	
Relative thermal index (electrical)	*RTI*		140	°C

Table 2 Characteristic values

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Stray inductance module	L_{sCE}				18		nH
Module lead resistance, terminals - chip	$R_{AA'+CC'}$	T_H = 25 °C, per switch			1.4		mΩ
Module lead resistance, terminals - chip	$R_{CC'+EE'}$	T_H = 25 °C, per switch			1.2		mΩ
Storage temperature	T_{stg}			-40		125	°C
Mounting torque for module mounting	*M*	- Mounting according to valid application note	M5, Screw	1.3		1.5	Nm
Weight	*G*				78		g

Note: *The current under continuous operation is limited to 50 A rms per connector pin.*

2 IGBT, T1 / T4

Table 3 Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
Collector-emitter voltage	V_{CES}		T_{vj} = 25 °C	1200	V
Implemented collector current	I_{CN}			340	A
Continuous DC collector current	I_{CDC}	$T_{vj\,max}$ = 175 °C	T_H = 65 °C	225	A
Repetitive peak collector current	I_{CRM}	t_p limited by $T_{vj\,op}$		680	A
Gate-emitter peak voltage	V_{GES}			±20	V

Table 4 **Characteristic values**

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Collector-emitter saturation voltage	$V_{CE\ sat}$	I_C = 340 A, V_{GE} = 15 V	T_{vj} = 25 °C		1.71	2.25	V
			T_{vj} = 125 °C		1.91		
			T_{vj} = 175 °C		2.00		
Gate threshold voltage	V_{GEth}	I_C = 5.44 mA, V_{CE} = V_{GE}, T_{vj} = 25 °C		4.85	5.5	6.15	V
Gate charge	Q_G	V_{GE} = ±15 V, V_{CC} = 600 V, T_{vj} = 25 °C			5.01		µC
Internal gate resistor	R_{Gint}	T_{vj} = 25 °C			2.5		Ω
Input capacitance	C_{ies}	f = 100 kHz, T_{vj} = 25 °C, V_{CE} = 25 V, V_{GE} = 0 V			38.6		nF
Reverse transfer capacitance	C_{res}	f = 100 kHz, T_{vj} = 25 °C, V_{CE} = 25 V, V_{GE} = 0 V			0.608		nF
Collector-emitter cut-off current	I_{CES}	V_{CE} = 1200 V, V_{GE} = 0 V	T_{vj} = 25 °C			22	µA
Gate-emitter leakage current	I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25 °C				100	nA
Turn-on delay time (inductive load)	t_{don}	I_C = 340 A, V_{CC} = 500 V, V_{GE} = ±15 V, R_{Gon} = 0.11 Ω	T_{vj} = 25 °C		0.327		µs
			T_{vj} = 125 °C		0.366		
			T_{vj} = 175 °C		0.388		
Rise time (inductive load)	t_r	I_C = 340 A, V_{CC} = 500 V, V_{GE} = ±15 V, R_{Gon} = 0.11 Ω	T_{vj} = 25 °C		0.026		µs
			T_{vj} = 125 °C		0.032		
			T_{vj} = 175 °C		0.035		
Turn-off delay time (inductive load)	t_{doff}	I_C = 340 A, V_{CC} = 500 V, V_{GE} = ±15 V, R_{Goff} = 2.4 Ω	T_{vj} = 25 °C		0.510		µs
			T_{vj} = 125 °C		0.570		
			T_{vj} = 175 °C		0.600		
Fall time (inductive load)	t_f	I_C = 340 A, V_{CC} = 500 V, V_{GE} = ±15 V, R_{Goff} = 2.4 Ω	T_{vj} = 25 °C		0.046		µs
			T_{vj} = 125 °C		0.096		
			T_{vj} = 175 °C		0.121		
Turn-on energy loss per pulse	E_{on}	I_C = 340 A, V_{CC} = 500 V, $L_σ$ = 9 nH, V_{GE} = ±15 V, R_{Gon} = 0.11 Ω, di/dt = 9450 A/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		11.1		mJ
			T_{vj} = 125 °C		13.5		
			T_{vj} = 175 °C		15.4		
Turn-off energy loss per pulse	E_{off}	I_C = 340 A, V_{CC} = 500 V, $L_σ$ = 9 nH, V_{GE} = ±15 V, R_{Goff} = 2.4 Ω, dv/dt = 8080 V/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		7.9		mJ
			T_{vj} = 125 °C		12.7		
			T_{vj} = 175 °C		15.3		
Thermal resistance, junction to heat sink	R_{thJH}	per IGBT, λ_{grease} = 3.3 W/(m·K)			0.242		K/W

(table continues...)

Table 4 **(continued) Characteristic values**

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Temperature under switching conditions	$T_{vj\ op}$		-40		175	°C

***Note**: Tvj op > 150 °C is only allowed for operation at overload conditions. For detailed specifications please refer to AN 2018-14.*

3 IGBT, T2 / T3

Table 5 **Maximum rated values**

Parameter	Symbol	Note or test condition		Values	Unit
Collector-emitter voltage	V_{CES}		T_{vj} = 25 °C	1200	V
Implemented collector current	I_{CN}			340	A
Continuous DC collector current	I_{CDC}	$T_{vj\ max}$ = 175 °C	T_H = 65 °C	235	A
Repetitive peak collector current	I_{CRM}	t_p limited by $T_{vj\ op}$		680	A
Gate-emitter peak voltage	V_{GES}			±20	V

Table 6 **Characteristic values**

Parameter	Symbol	Note or test condition		Min.	Typ.	Max.	Unit
Collector-emitter saturation voltage	$V_{CE\ sat}$	I_C = 340 A, V_{GE} = 15 V	T_{vj} = 25 °C		1.71	2.25	V
			T_{vj} = 125 °C		1.91		
			T_{vj} = 175 °C		2.00		
Gate threshold voltage	V_{GEth}	I_C = 5.44 mA, V_{CE} = V_{GE}, T_{vj} = 25 °C		4.85	5.5	6.15	V
Gate charge	Q_G	V_{GE} = ±15 V, V_{CC} = 600 V, T_{vj} = 25 °C			5.01		µC
Internal gate resistor	R_{Gint}	T_{vj} = 25 °C			2.5		Ω
Input capacitance	C_{ies}	f = 100 kHz, T_{vj} = 25 °C, V_{CE} = 25 V, V_{GE} = 0 V			38.6		nF
Reverse transfer capacitance	C_{res}	f = 100 kHz, T_{vj} = 25 °C, V_{CE} = 25 V, V_{GE} = 0 V			0.608		nF
Collector-emitter cut-off current	I_{CES}	V_{CE} = 1200 V, V_{GE} = 0 V	T_{vj} = 25 °C			23	µA
Gate-emitter leakage current	I_{GES}	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25 °C				100	nA

(table continues...)

Table 6 **(continued) Characteristic values**

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Turn-on delay time (inductive load)	t_{don}	I_C = 340 A, V_{CC} = 500 V, R_{Gon} = 0.47 Ω	T_{vj} = 25 °C		0.370		µs
			T_{vj} = 125 °C		0.410		
			T_{vj} = 175 °C		0.430		
Rise time (inductive load)	t_r	I_C = 340 A, V_{CC} = 500 V, R_{Gon} = 0.47 Ω	T_{vj} = 25 °C		0.036		µs
			T_{vj} = 125 °C		0.041		
			T_{vj} = 175 °C		0.045		
Turn-off delay time (inductive load)	t_{doff}	I_C = 340 A, V_{CC} = 500 V, R_{Goff} = 9.1 Ω	T_{vj} = 25 °C		1.080		µs
			T_{vj} = 125 °C		1.150		
			T_{vj} = 175 °C		1.200		
Fall time (inductive load)	t_f	I_C = 340 A, V_{CC} = 500 V, R_{Goff} = 9.1 Ω	T_{vj} = 25 °C		0.025		µs
			T_{vj} = 125 °C		0.062		
			T_{vj} = 175 °C		0.096		
Turn-on energy loss per pulse	E_{on}	I_C = 340 A, V_{CC} = 500 V, L_σ = 9 nH, R_{Gon} = 0.47 Ω, di/dt = 7100 A/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		11.7		mJ
			T_{vj} = 125 °C		12.5		
			T_{vj} = 175 °C		13.8		
Turn-off energy loss per pulse	E_{off}	I_C = 340 A, V_{CC} = 500 V, L_σ = 9 nH, R_{Goff} = 9.1 Ω, dv/dt = 5700 V/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		10.5		mJ
			T_{vj} = 125 °C		14.3		
			T_{vj} = 175 °C		17		
Thermal resistance, junction to heat sink	R_{thJH}	per IGBT, λ_{grease} = 3.3 W/(m·K)			0.225		K/W
Temperature under switching conditions	$T_{vj\,op}$			-40		175	°C

Note: *Tvj op > 150 °C is only allowed for operation at overload conditions. For detailed specifications please refer to AN 2018-14.*

4 Diode, D1 / D4

Table 7 **Maximum rated values**

Parameter	Symbol	Note or test condition		Values	Unit
Repetitive peak reverse voltage	V_{RRM}		T_{vj} = 25 °C	1200	V
Implemented forward current	I_{FN}			400	A

(table continues...)

Table 7 **(continued) Maximum rated values**

Parameter	Symbol	Note or test condition		Values	Unit
Repetitive peak forward current	I_{FRM}	t_P = 1 ms		800	A
I²t - value	I^2t	t_P = 10 ms, V_R = 0 V	T_{vj} = 125 °C	5700	A^2s
			T_{vj} = 175 °C	5050	

Table 8 **Characteristic values**

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Forward voltage	V_F	I_F = 400 A, V_{GE} = 0 V	T_{vj} = 25 °C		2.50	3.05	V
			T_{vj} = 125 °C		2.18		
			T_{vj} = 175 °C		1.98		
Peak reverse recovery current	I_{RM}	V_{CC} = 500 V, I_F = 400 A, V_{GE} = -15 V, -di_F/dt = 7100 A/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		185		A
			T_{vj} = 125 °C		290		
			T_{vj} = 175 °C		340		
Recovered charge	Q_r	V_{CC} = 500 V, I_F = 400 A, V_{GE} = -15 V, -di_F/dt = 7100 A/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		11.5		µC
			T_{vj} = 125 °C		25.8		
			T_{vj} = 175 °C		35.5		
Reverse recovery energy	E_{rec}	V_{CC} = 500 V, I_F = 400 A, V_{GE} = -15 V, -di_F/dt = 7100 A/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		3.3		mJ
			T_{vj} = 125 °C		7.89		
			T_{vj} = 175 °C		11.4		
Thermal resistance, junction to heat sink	R_{thJH}	per diode, λ_{grease} = 3.3 W/(m·K)			0.293		K/W
Temperature under switching conditions	$T_{vj\ op}$			-40		175	°C

***Note**: $T_{vj\ op}$ > 150°C is allowed for operation at overload conditions. For detailed specifications, please refer to AN 2018-14.*

5 Diode, D2 / D3

Table 9 **Maximum rated values**

Parameter	Symbol	Note or test condition		Values	Unit
Repetitive peak reverse voltage	V_{RRM}		T_{vj} = 25 °C	1200	V
Implemented forward current	I_{FN}			300	A

(table continues...)

Table 9 (continued) Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
Continuous DC forward current	I_F			250	A
Repetitive peak forward current	I_{FRM}	t_P = 1 ms		500	A
I^2t - value	I^2t	t_P = 10 ms, V_R = 0 V	T_{vj} = 125 °C	9240	A^2s
			T_{vj} = 175 °C	8070	

Table 10 Characteristic values

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Forward voltage	V_F	I_F = 250 A, V_{GE} = 0 V	T_{vj} = 25 °C		1.62	1.93	V
			T_{vj} = 125 °C		1.50		
			T_{vj} = 175 °C		1.42		
Peak reverse recovery current	I_{RM}	V_{CC} = 500 V, I_F = 250 A, V_{GE} = -15 V, -di_F/dt = 7100 A/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		195		A
			T_{vj} = 125 °C		265		
			T_{vj} = 175 °C		307		
Recovered charge	Q_r	V_{CC} = 500 V, I_F = 250 A, V_{GE} = -15 V, -di_F/dt = 7100 A/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		17.5		µC
			T_{vj} = 125 °C		34.7		
			T_{vj} = 175 °C		46.1		
Reverse recovery energy	E_{rec}	V_{CC} = 500 V, I_F = 250 A, V_{GE} = -15 V, -di_F/dt = 7100 A/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		5.2		mJ
			T_{vj} = 125 °C		11.6		
			T_{vj} = 175 °C		15.7		
Thermal resistance, junction to heat sink	R_{thJH}	per diode, λ_{grease} = 3.3 W/(m·K)			0.298		K/W
Temperature under switching conditions	$T_{vj\,op}$			-40		175	°C

***Note**: Tvj op > 150 °C is only allowed for operation at overload conditions. For detailed specifications please refer to AN 2018-14.*

6 Diode, D5 / D6

Table 11 Maximum rated values

Parameter	Symbol	Note or test condition		Values	Unit
Repetitive peak reverse voltage	V_{RRM}		T_{vj} = 25 °C	1200	V

(table continues...)

Table 11 **(continued) Maximum rated values**

Parameter	Symbol	Note or test condition		Values	Unit
Implemented forward current	I_{FN}			300	A
Repetitive peak forward current	I_{FRM}	t_P = 1 ms		600	A
I^2t - value	I^2t	t_P = 10 ms, V_R = 0 V	T_{vj} = 125 °C	3850	A^2s
			T_{vj} = 175 °C	3300	

Table 12 **Characteristic values**

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Forward voltage	V_F	I_F = 300 A, V_{GE} = 0 V	T_{vj} = 25 °C		2.50	3.05	V
			T_{vj} = 125 °C		2.18		
			T_{vj} = 175 °C		1.98		
Peak reverse recovery current	I_{RM}	V_{CC} = 500 V, I_F = 300 A, V_{GE} = -15 V, -di_F/dt = 9450 A/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		182		A
			T_{vj} = 125 °C		276		
			T_{vj} = 175 °C		329		
Recovered charge	Q_r	V_{CC} = 500 V, I_F = 300 A, V_{GE} = -15 V, -di_F/dt = 9450 A/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		9		µC
			T_{vj} = 125 °C		20		
			T_{vj} = 175 °C		28		
Reverse recovery energy	E_{rec}	V_{CC} = 500 V, I_F = 300 A, V_{GE} = -15 V, -di_F/dt = 9450 A/µs (T_{vj} = 175 °C)	T_{vj} = 25 °C		2.62		mJ
			T_{vj} = 125 °C		6.41		
			T_{vj} = 175 °C		9.33		
Thermal resistance, junction to heat sink	R_{thJH}	per diode, λ_{grease} = 3.3 W/(m·K)			0.606		K/W
Temperature under switching conditions	$T_{vj\,op}$			-40		175	°C

Note: *$T_{vj\,op}$ > 150°C is allowed for operation at overload conditions. For detailed specifications, please refer to AN 2018-14.*

7 NTC-Thermistor

Table 13 **Characteristic values**

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Rated resistance	R_{25}	T_{NTC} = 25 °C		5		kΩ

(table continues...)

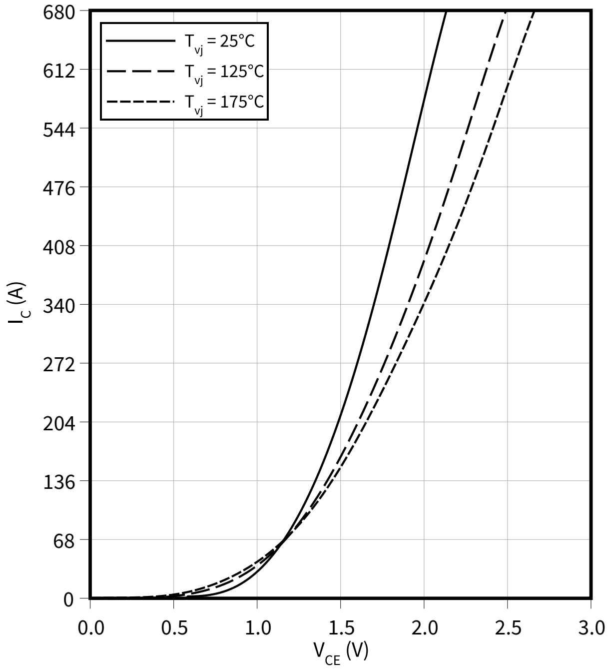
Table 13 **(continued) Characteristic values**

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Deviation of R_{100}	$\Delta R/R$	T_{NTC} = 100 °C, R_{100} = 493 Ω	-5		5	%
Power dissipation	P_{25}	T_{NTC} = 25 °C			20	mW
B-value	$B_{25/50}$	$R_2 = R_{25}\ \exp[B_{25/50}(1/T_2-1/(298{,}15\ K))]$		3375		K
B-value	$B_{25/80}$	$R_2 = R_{25}\ \exp[B_{25/80}(1/T_2-1/(298{,}15\ K))]$		3411		K
B-value	$B_{25/100}$	$R_2 = R_{25}\ \exp[B_{25/100}(1/T_2-1/(298{,}15\ K))]$		3433		K

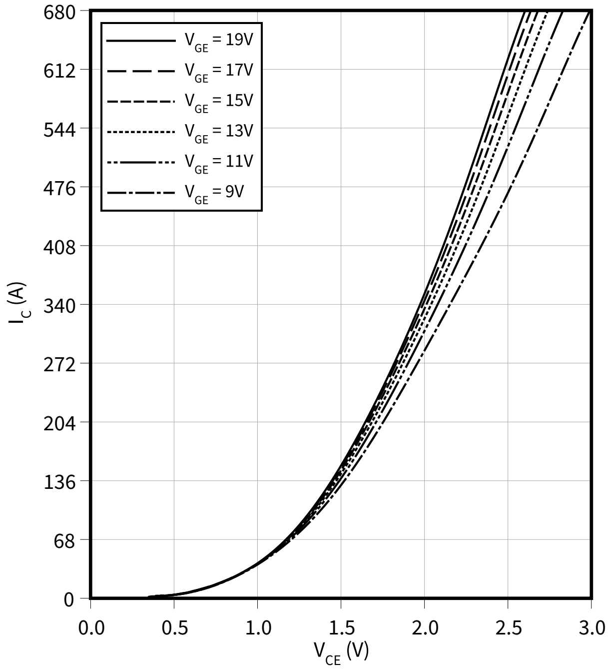
***Note**: For an analytical description of the NTC characteristics please refer to AN2009-10, chapter 4*

8 Characteristics diagrams

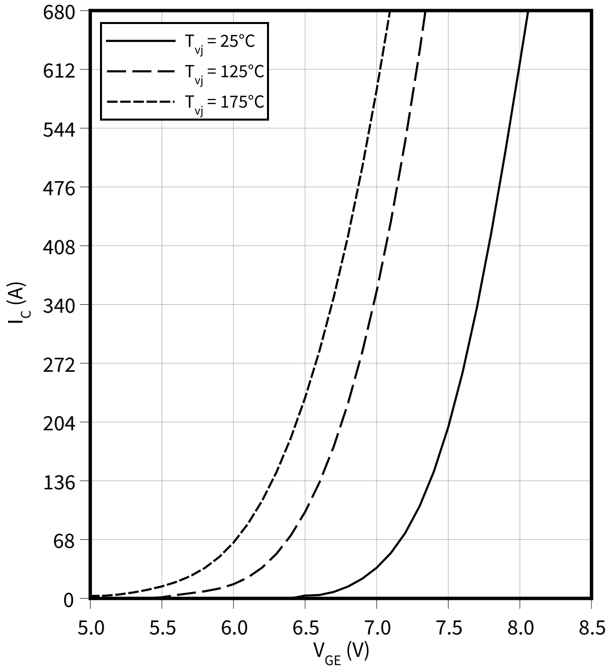
Output characteristic (typical), IGBT, T1 / T4
$I_C = f(V_{CE})$
$V_{GE} = 15$ V



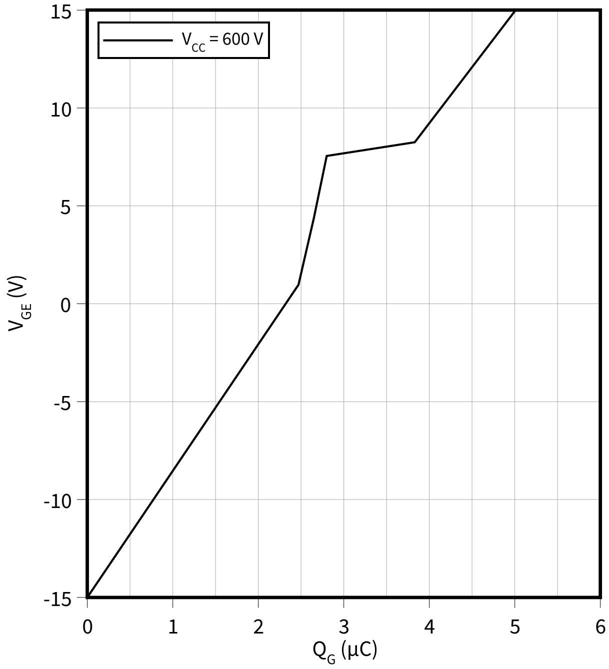
Output characteristic field (typical), IGBT, T1 / T4
$I_C = f(V_{CE})$
$T_{vj} = 175$ °C



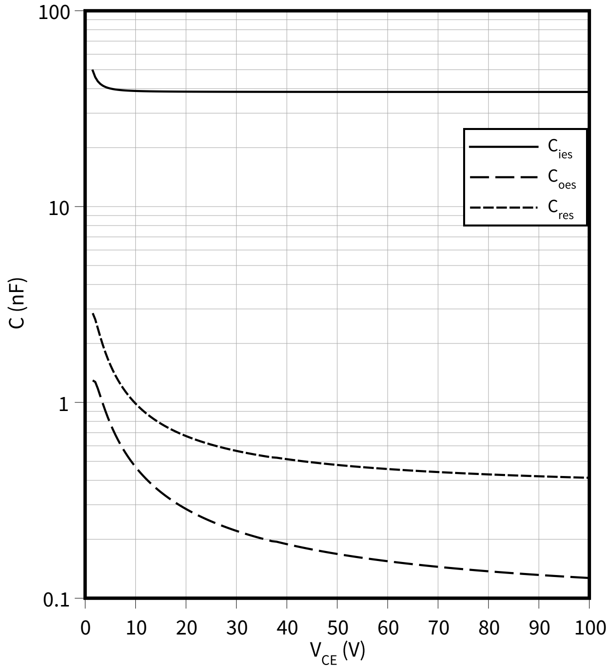
Transfer characteristic (typical), IGBT, T1 / T4
$I_C = f(V_{GE})$
$V_{CE} = 20$ V



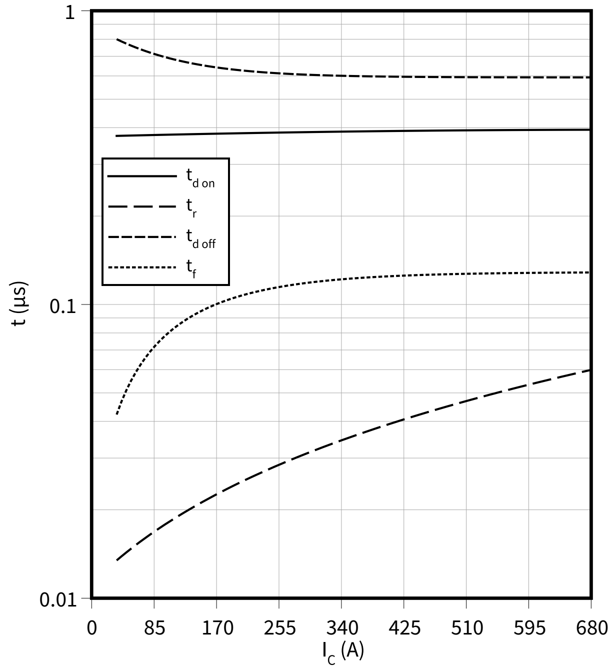
Gate charge characteristic (typical), IGBT, T1 / T4
$V_{GE} = f(Q_G)$
$I_C = 340$ A, $T_{vj} = 25$ °C



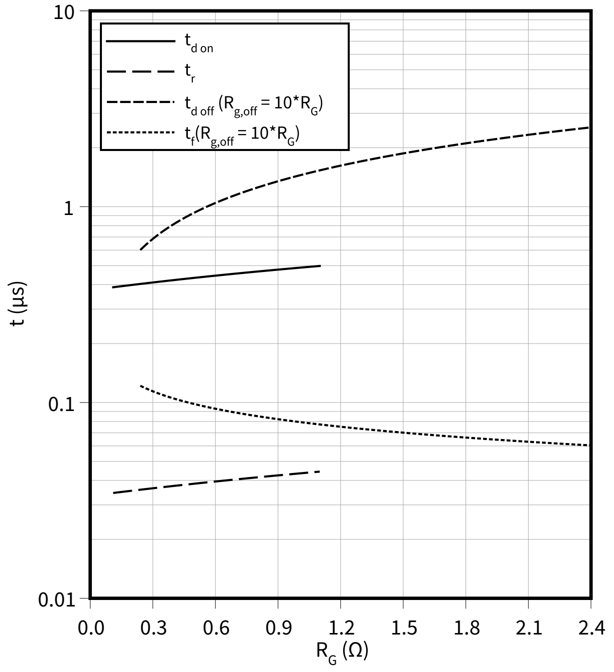
Capacity characteristic (typical), IGBT, T1 / T4
$C = f(V_{CE})$
$f = 100$ kHz, $V_{GE} = 0$ V, $T_{vj} = 25$ °C



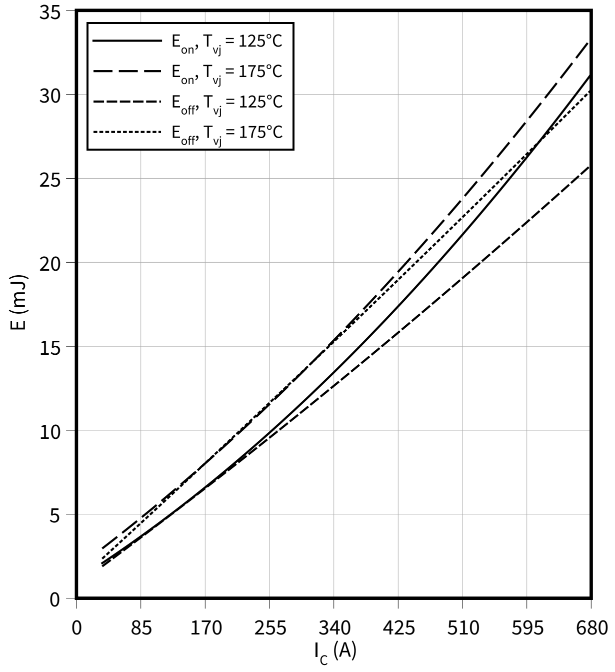
Switching times (typical), IGBT, T1 / T4
$t = f(I_C)$
$R_{Goff} = 2.4\ \Omega$, $R_{Gon} = 0.11\ \Omega$, $V_{GE} = \pm15$ V, $V_{CC} = 500$ V, $T_{vj} = 175$ °C



Switching times (typical), IGBT, T1 / T4
$t = f(R_G)$
$V_{GE} = \pm15$ V, $I_C = 340$ A, $V_{CC} = 500$ V, $T_{vj} = 175$ °C



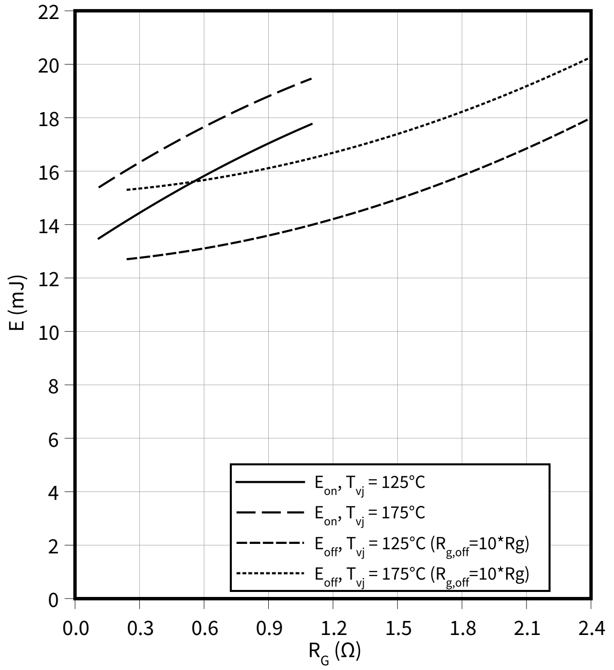
Switching losses (typical), IGBT, T1 / T4
$E = f(I_C)$
$R_{Goff} = 2.4\ \Omega$, $R_{Gon} = 0.11\ \Omega$, $V_{CC} = 500$ V, ± 15 V



Switching losses (typical), IGBT, T1 / T4

$E = f(R_G)$

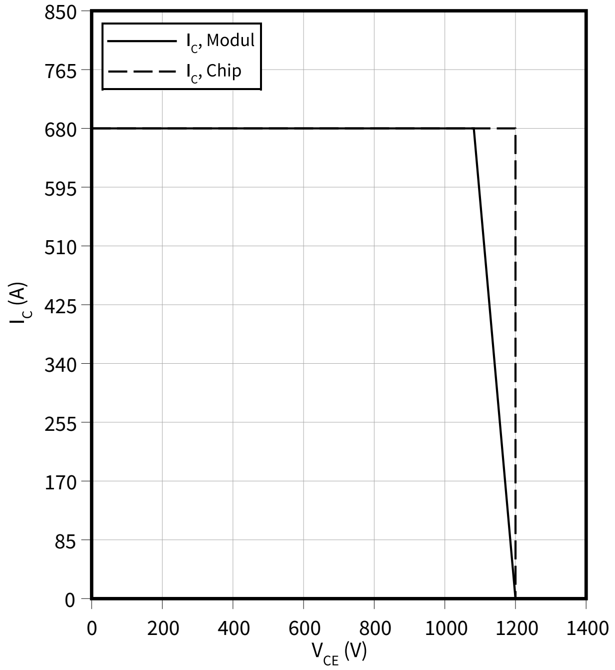
$I_C = 340$ A, $V_{CC} = 500$ V, ± 15 V



Reverse bias safe operating area (RBSOA), IGBT, T1 / T4

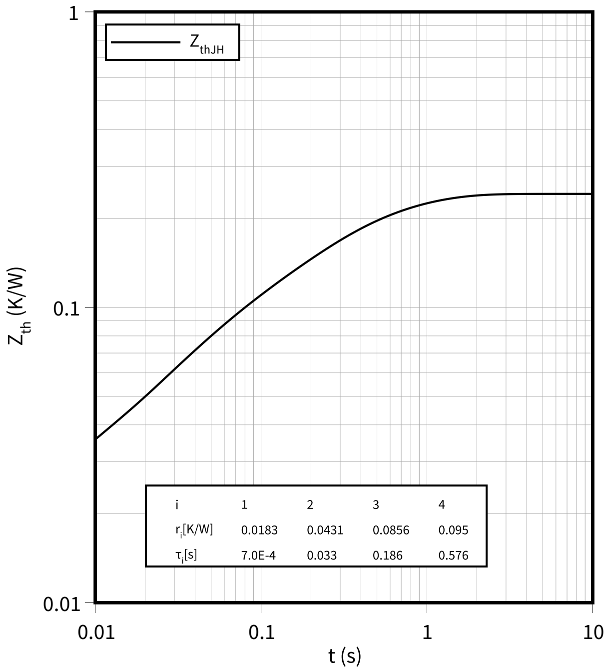
$I_C = f(V_{CE})$

$R_{Goff} = 2.4\ \Omega$, $V_{GE} = \pm 15$ V, $T_{vj} = 175$ °C



Transient thermal impedance, IGBT, T1 / T4

$Z_{th} = f(t)$

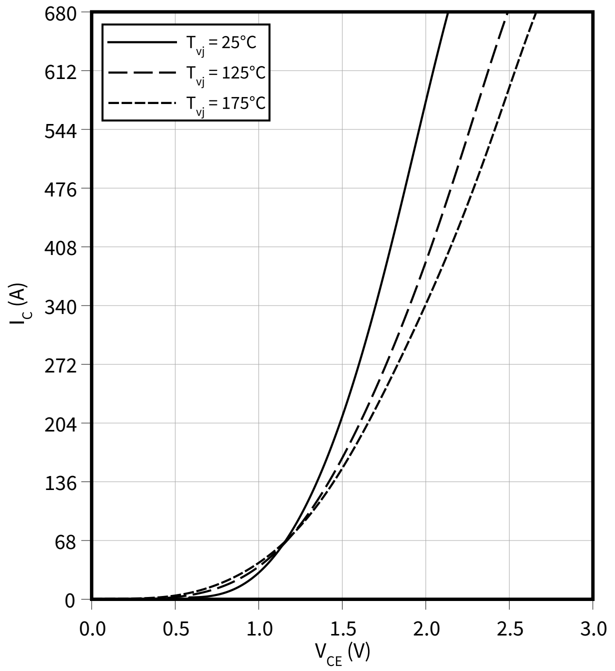


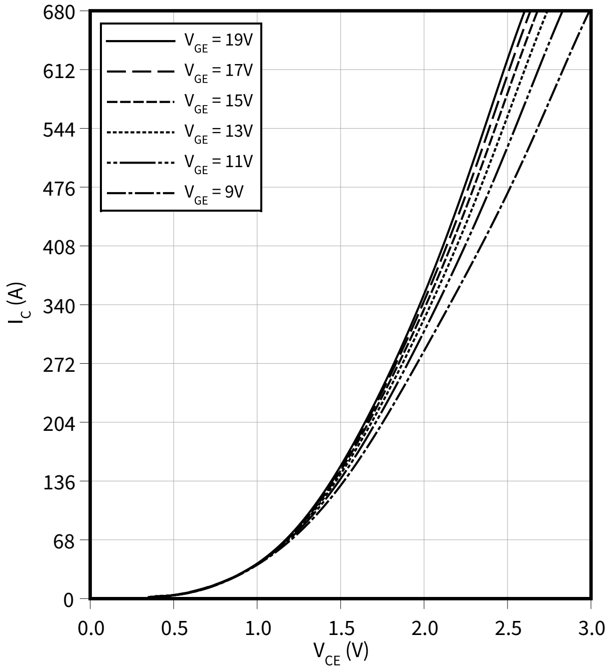
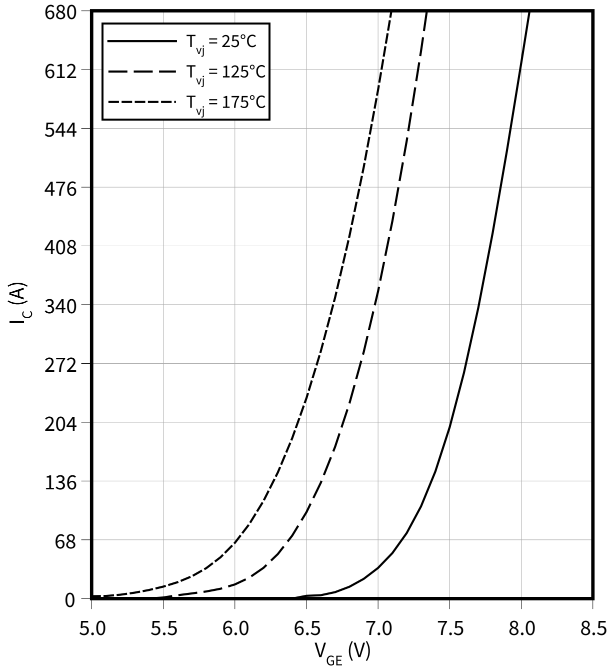
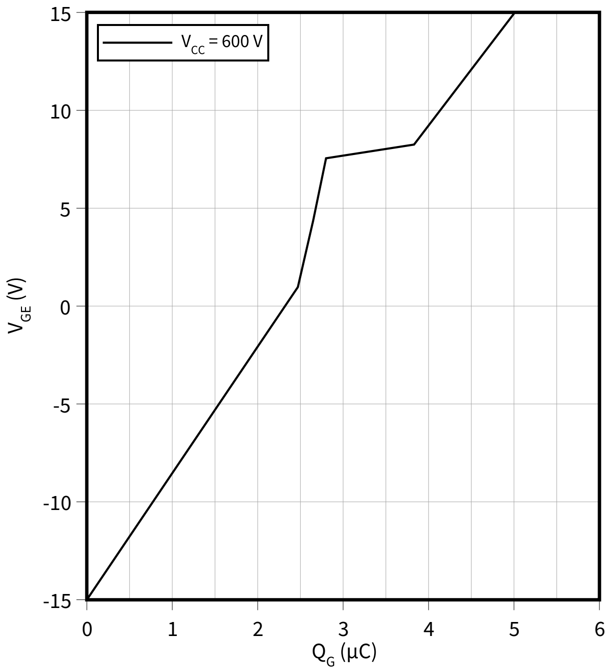
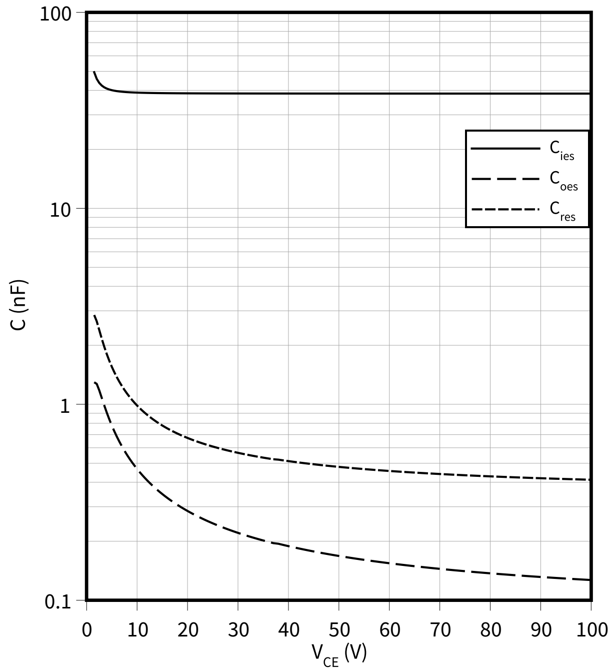
i	1	2	3	4
r_i[K/W]	0.0183	0.0431	0.0856	0.095
τ_i[s]	7.0E-4	0.033	0.186	0.576

Output characteristic (typical), IGBT, T2 / T3

$I_C = f(V_{CE})$

$V_{GE} = 15$ V

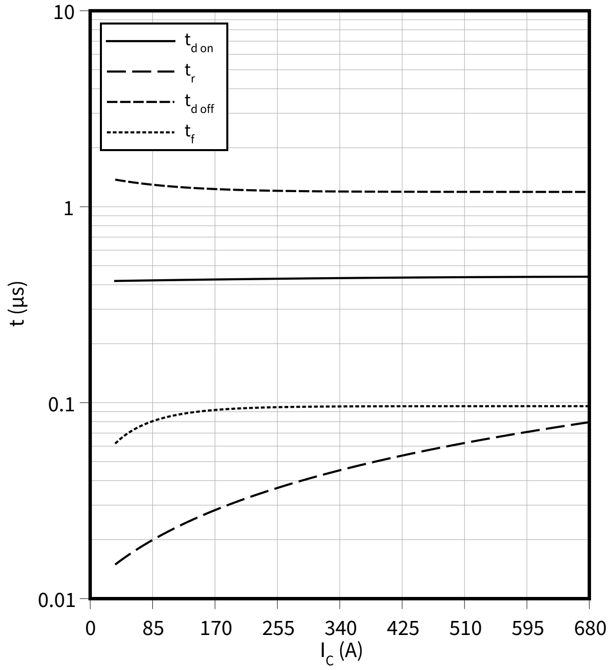


Output characteristic field (typical), IGBT, T2 / T3 $I_C = f(V_{CE})$ $T_{vj} = 175\ °C$	**Transfer characteristic (typical), IGBT, T2 / T3** $I_C = f(V_{GE})$ $V_{CE} = 20\ V$
	
Gate charge characteristic (typical), IGBT, T2 / T3 $V_{GE} = f(Q_G)$ $I_C = 340\ A$, $T_{vj} = 25\ °C$	**Capacity characteristic (typical), IGBT, T2 / T3** $C = f(V_{CE})$ $f = 100\ kHz$, $V_{GE} = 0\ V$, $T_{vj} = 25\ °C$
	

Switching times (typical), IGBT, T2 / T3

$t = f(I_C)$

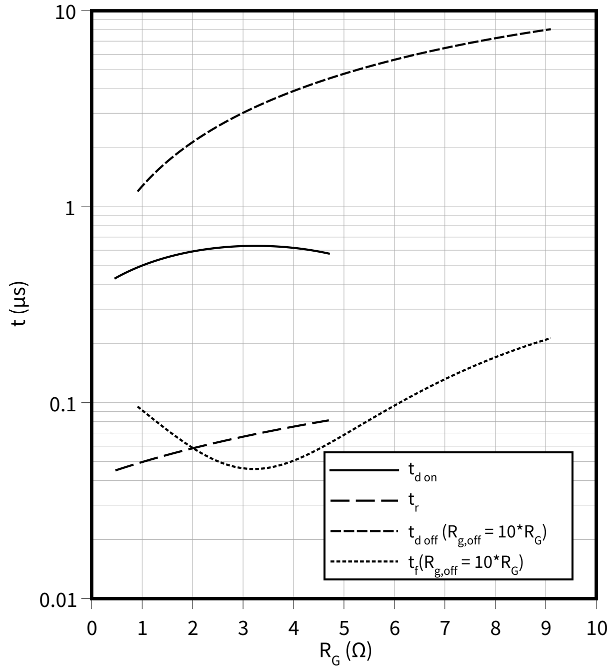
$R_{Goff} = 9.1\ \Omega$, $R_{Gon} = 0.47\ \Omega$, $V_{GE} = \pm15$ V, $V_{CC} = 500$ V, $T_{vj} = 175$ °C



Switching times (typical), IGBT, T2 / T3

$t = f(R_G)$

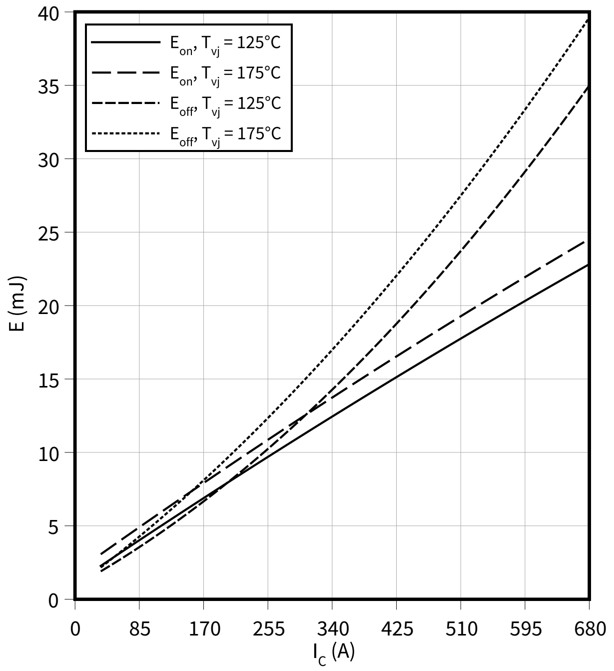
$V_{GE} = \pm15$ V, $I_C = 340$ A, $V_{CC} = 500$ V, $T_{vj} = 175$ °C



Switching losses (typical), IGBT, T2 / T3

$E = f(I_C)$

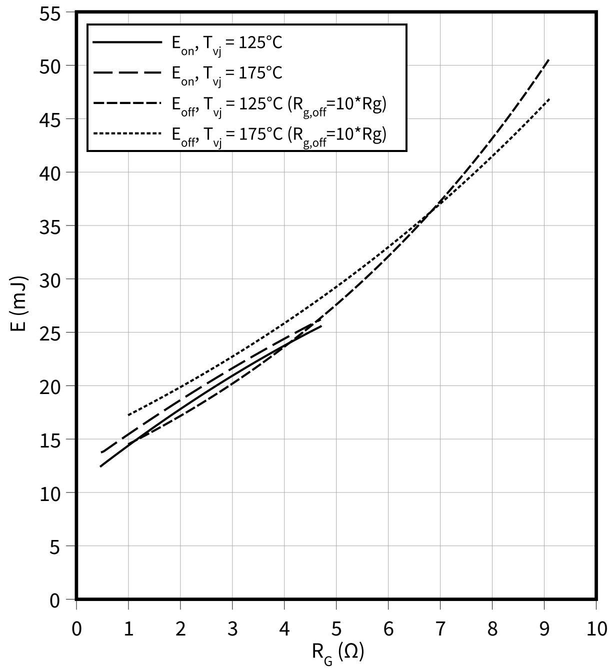
$R_{Goff} = 9.1\ \Omega$, $R_{Gon} = 0.47\ \Omega$, $V_{CC} = 500$ V, ± 15 V



Switching losses (typical), IGBT, T2 / T3

$E = f(R_G)$

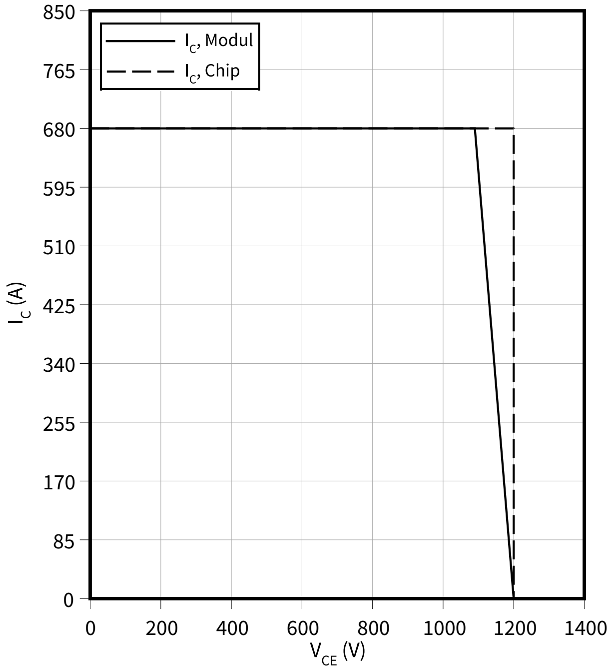
$I_C = 340$ A, $V_{CC} = 500$ V, ± 15 V



Reverse bias safe operating area (RBSOA), IGBT, T2 / T3

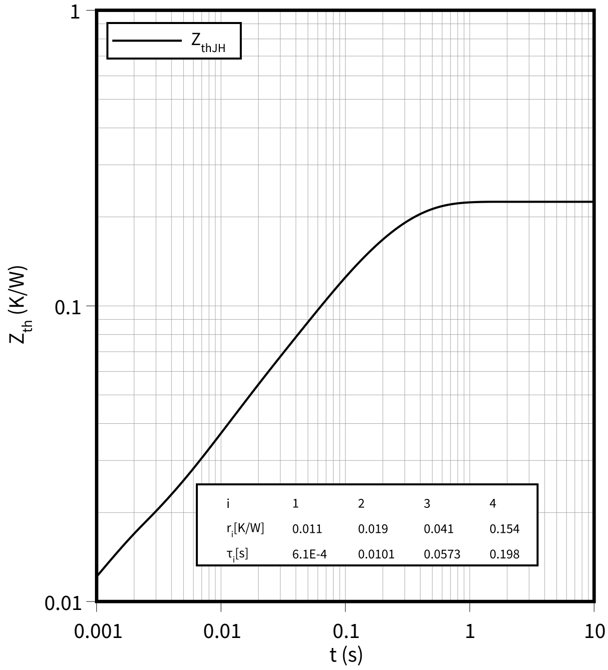
$I_C = f(V_{CE})$

$R_{Goff} = 9.1\ \Omega$, $V_{GE} = \pm 15\ V$, $T_{vj} = 175\ °C$



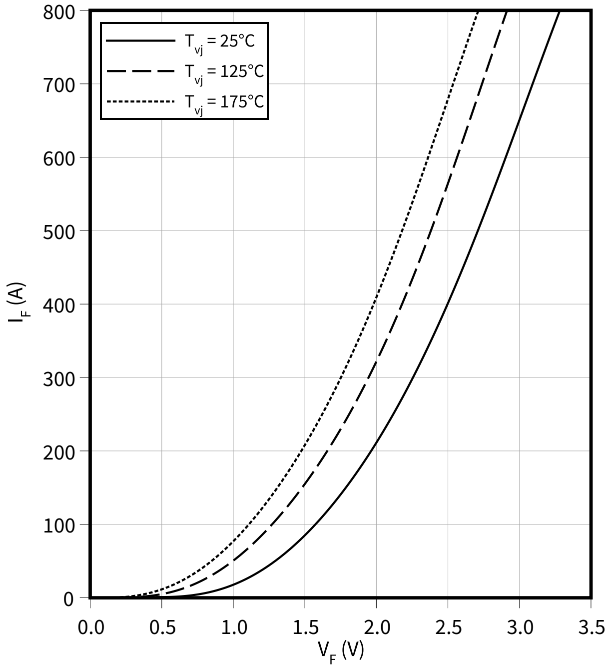
Transient thermal impedance, IGBT, T2 / T3

$Z_{th} = f(t)$



Forward characteristic (typical), Diode, D1 / D4

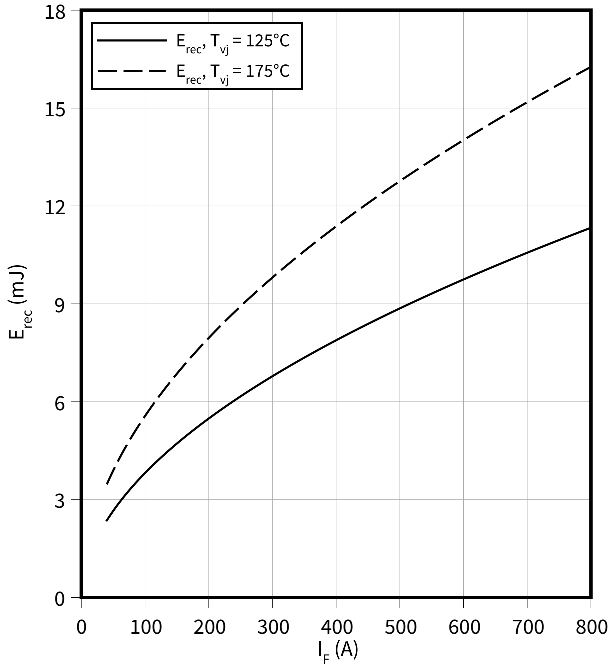
$I_F = f(V_F)$



Switching losses (typical), Diode, D1 / D4

$E_{rec} = f(I_F)$

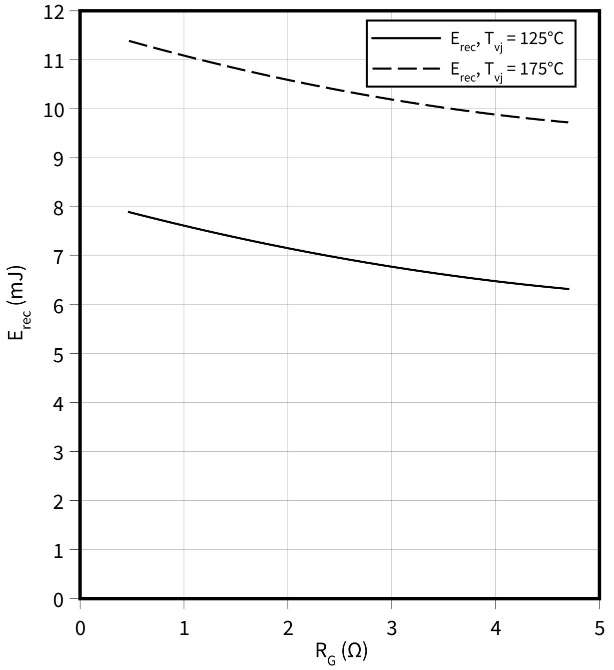
$R_{Gon} = 0.47\ \Omega$, $V_{CC} = 500\ V$



Switching losses (typical), Diode, D1 / D4

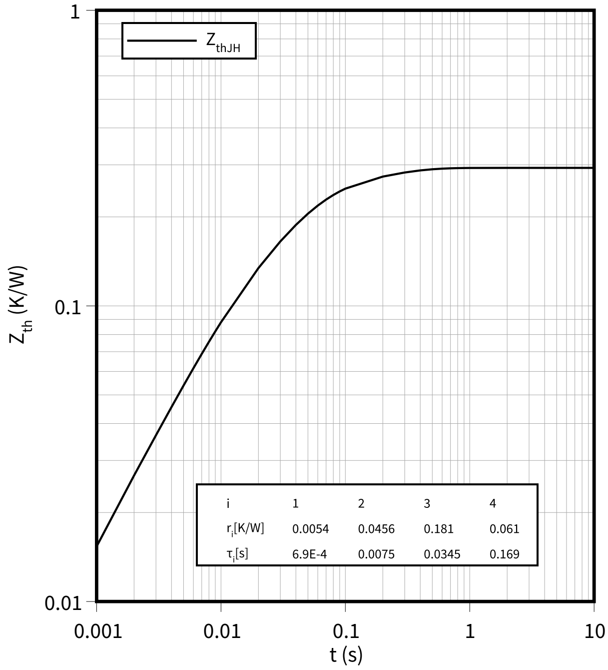
$E_{rec} = f(R_G)$

$I_F = 400\ A$, $V_{CC} = 500\ V$



Transient thermal impedance, Diode, D1 / D4

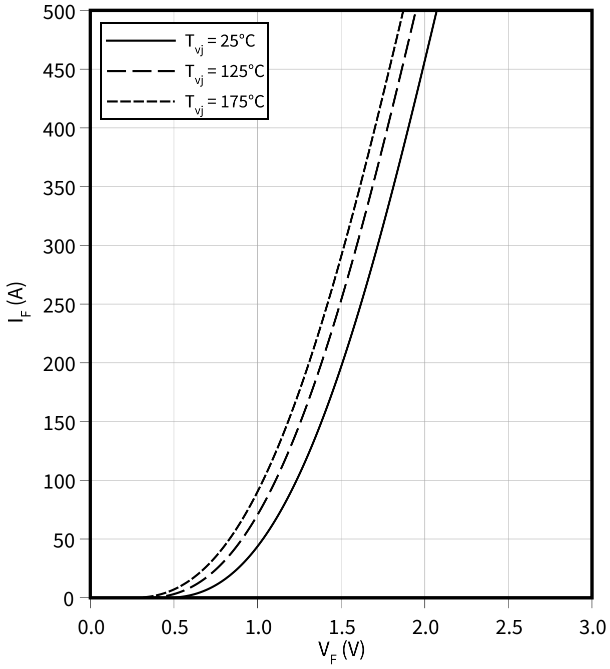
$Z_{th} = f(t)$



i	1	2	3	4
r_i[K/W]	0.0054	0.0456	0.181	0.061
τ_i[s]	6.9E-4	0.0075	0.0345	0.169

Forward characteristic (typical), Diode, D2 / D3

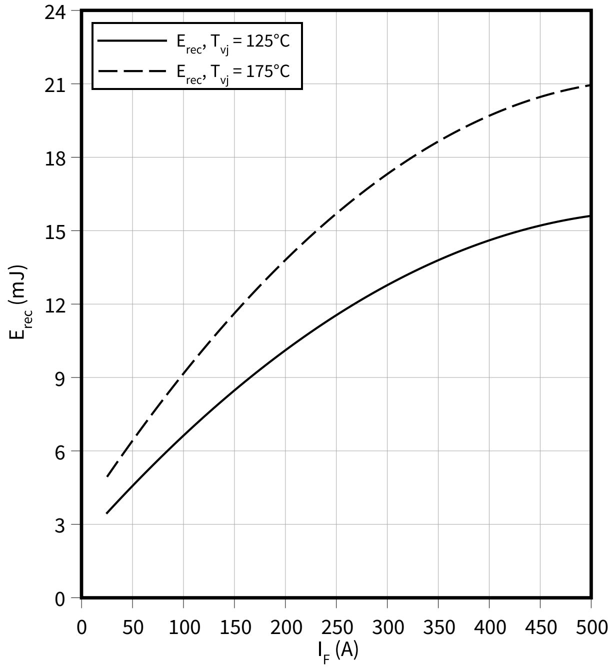
$I_F = f(V_F)$



Switching losses (typical), Diode, D2 / D3

$E_{rec} = f(I_F)$

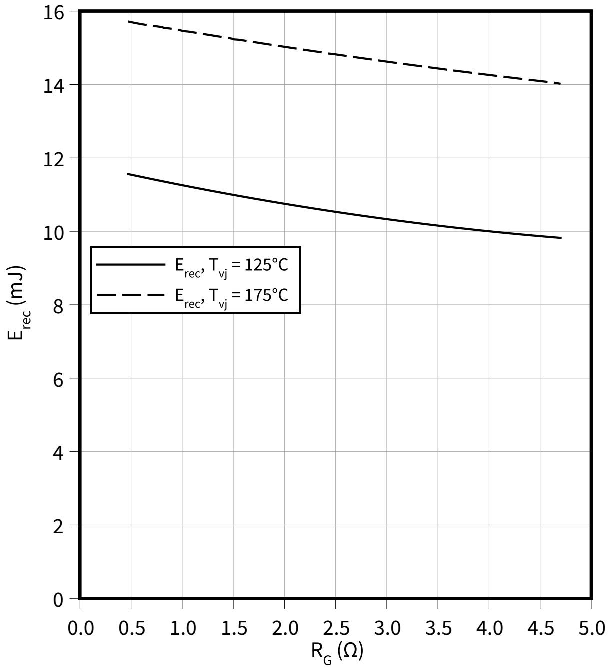
$R_{Gon} = 0.47\ \Omega$, $V_{CC} = 500\ V$



Switching losses (typical), Diode, D2 / D3

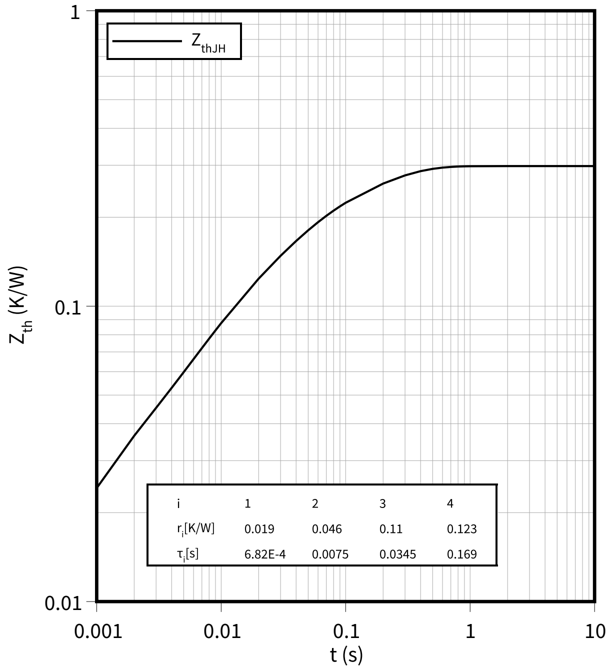
$E_{rec} = f(R_G)$

$I_F = 250\ A$, $V_{CC} = 500\ V$



Transient thermal impedance, Diode, D2 / D3

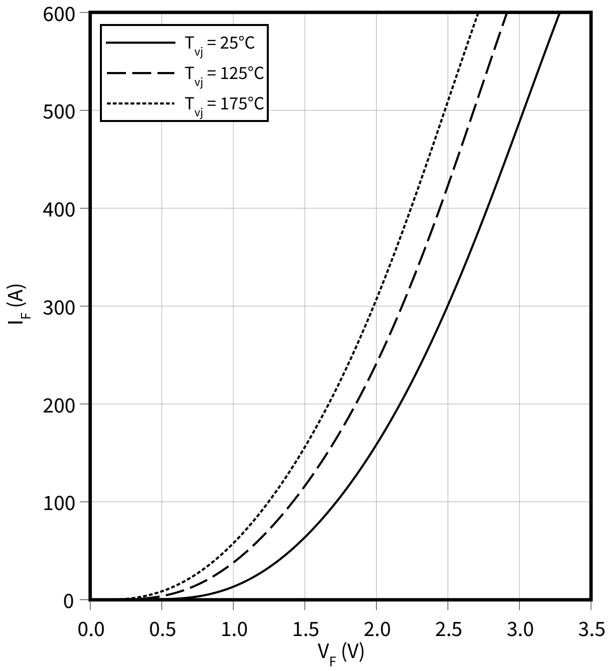
$Z_{th} = f(t)$



i	1	2	3	4
r_i[K/W]	0.019	0.046	0.11	0.123
τ_i[s]	6.82E-4	0.0075	0.0345	0.169

Forward characteristic (typical), Diode, D5 / D6

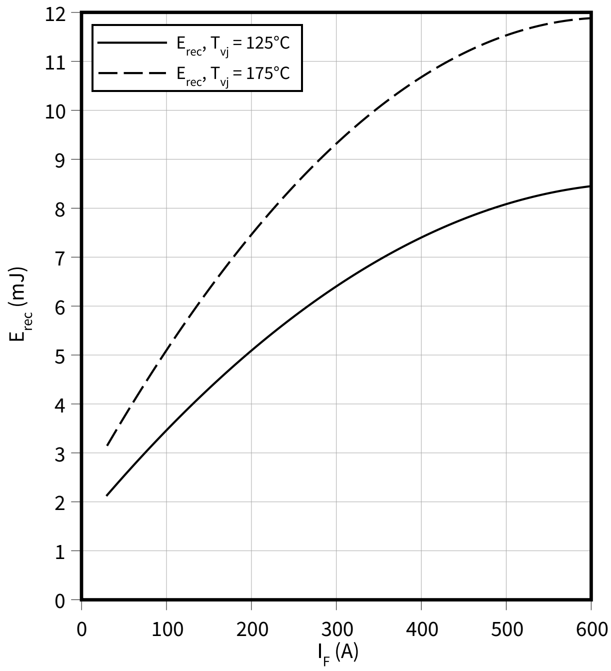
$I_F = f(V_F)$



Switching losses (typical), Diode, D5 / D6

$E_{rec} = f(I_F)$

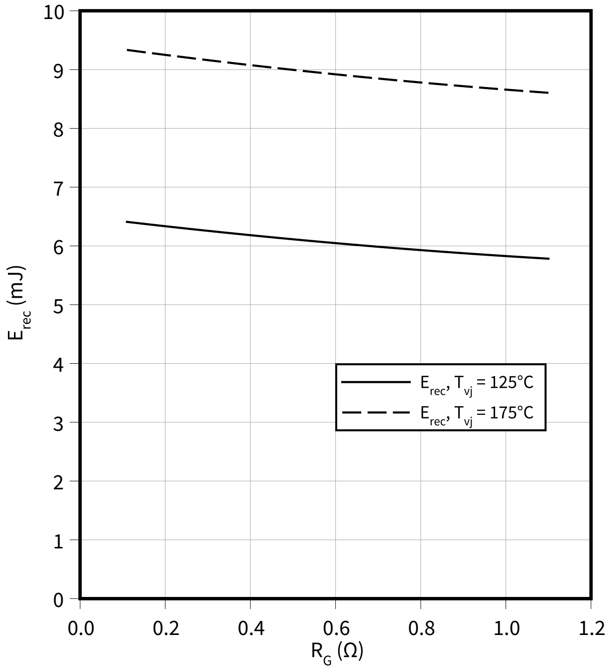
$R_{Gon} = 0.11\ \Omega$, $V_{CC} = 500\ V$



Switching losses (typical), Diode, D5 / D6

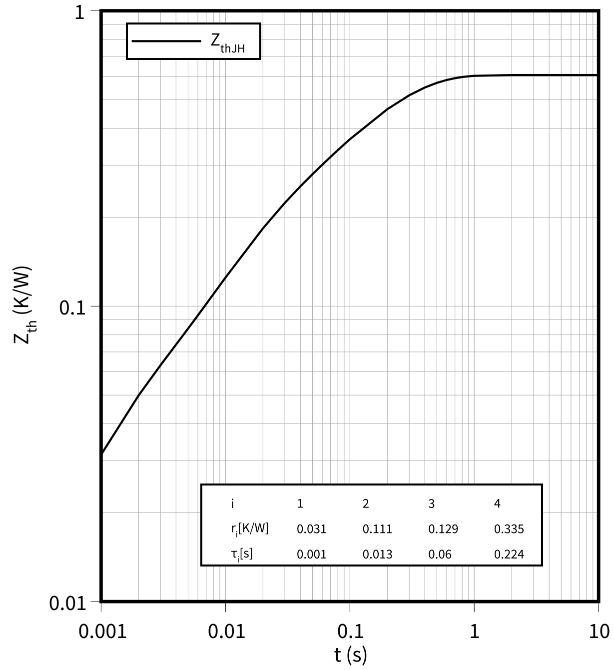
$E_{rec} = f(R_G)$

$I_F = 300$ A, $V_{CC} = 500$ V



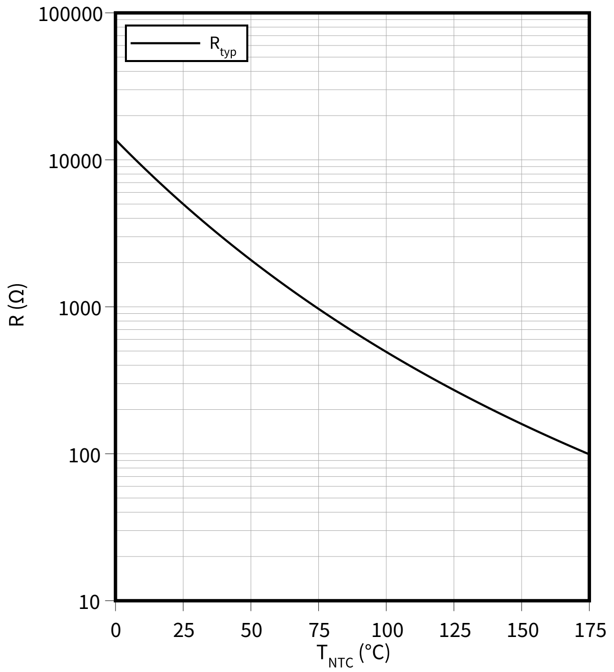
Transient thermal impedance, Diode, D5 / D6

$Z_{th} = f(t)$



Temperature characteristic (typical), NTC-Thermistor

$R = f(T_{NTC})$



9 Circuit diagram

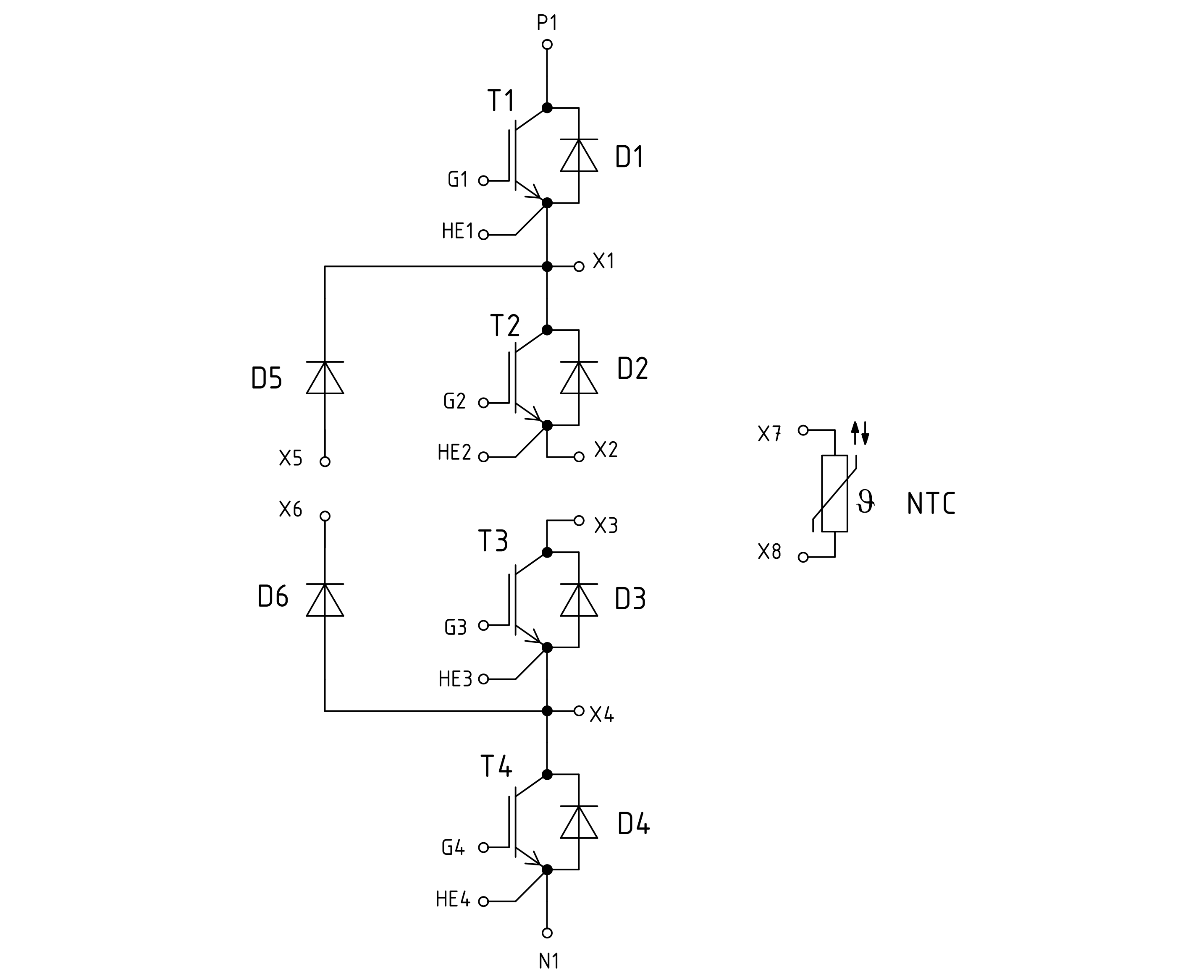


Figure 1

10 Package outlines

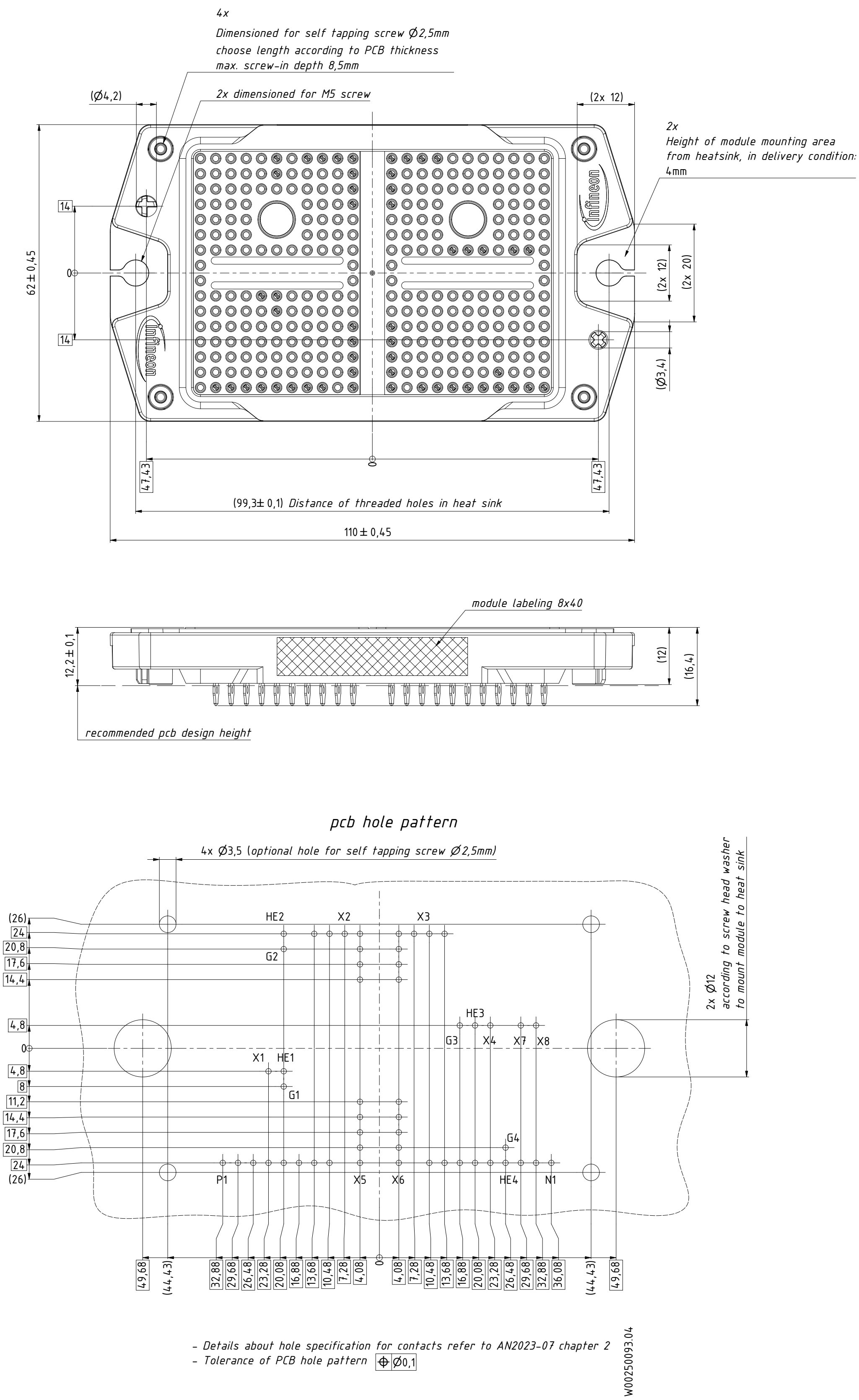


Figure 2

11 Module label code

Module label code		
Code format	Data Matrix	Barcode Code128
Encoding	ASCII text	Code Set A
Symbol size	16x16	23 digits
Standard	IEC24720 and IEC16022	IEC8859-1

Code content	*Content*	*Digit*	*Example*
	Module serial number	1 – 5	71549
	Module material number	6 - 11	142846
	Production order number	12 - 19	55054991
	Date code (production year)	20 – 21	15
	Date code (production week)	22 – 23	30
Example	71549142846550549911530		71549142846550549911530

Figure 3

Revision history

Document version	Date of release	Description of changes
0.10	2024-08-09	Initial version
1.00	2024-12-04	Final datasheet

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