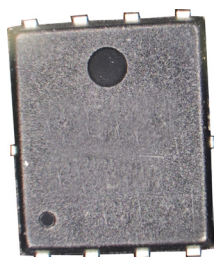


N Channel MOSFET

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Features

- $V_{DS(V)} = 150V$
- $I_D = 65A$
- $R_{DS(on)}$ (at $V_{GS} = 10V$) $< 9.9m\Omega$
- SGT MOSFET
- Superior UIS performance
- 100% UIS tested
- Very low on-resistance

RoHS
Compliant

Absolute Maximum Ratings (TA = 25°C unless otherwise noted)

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	V_{DS}	150	V	
Gate-Source Voltage	V_{GS}	+20		
Continuous Drain Current ^A	I_D	$T_C = 25^\circ C$	65	A
		$T_C = 100^\circ C$	41	
Pulsed Drain Current ^B	I_{DM}	260		
Single Pulse Avalanche Energy ^C	E_{AS}	324	mJ	
Power Dissipation	P_D	104	W	
Thermal Resistance, Junction- to-Ambient ^D	$R_{\theta JA}$	45	mJ	
Thermal Resistance, Junction- to-Case	$R_{\theta JC}$	1.2	°C/W	
Storage Temperature Range	T_{stg}	-55 to 150	°C	

Notes:

A. The max drain current rating is silicon limited

B. Repetitive Rating: Pulse width limited by maximum junction temperature

C. L = 0.5 mH, $V_{DD} = 50V$, $I_{AS} = 36A$, $R_G = 25\Omega$, Starting $T_J = 25^\circ C$

D. Mount on minimum PCB layout

Electrical Characteristics (T_J = 25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Static Characteristics							
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D = -250\mu A$, $V_{GS} = 0V$	150			V	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -150V$, $V_{GS} = 0V$			1	μA	
Gate to Source Leakage Current	I_{GSS}	$V_{DS} = 0V$, $V_{GS} = \pm 20V$			± 100	nA	
Gate to Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	2	3	4	V	
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -10V$, $I_D = 20A$		8	9.9	m Ω	
Dynamic Characteristics							
Input Capacitance	C_{iss}	$V_{GS} = 0V$, $V_{DS} = 75V$, $F = 1MHz$		3690		pF	
Output Capacitance	C_{oss}				320		
Reverse Transfer Capacitance	C_{rss}				15		
Gate Resistance	R_G	$F = 1MHz$		1.2		Ω	

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Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DD}=75V, I_D=20A, V_{GS}=10V,$		51		nC
Gate Source Charge	Q_{gs}			18		
Gate Drain Charge	Q_{gd}			10		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 75V, R_L = 3.8\Omega,$ $V_{GS} = 10V, R_G = 6.8\Omega$		23		nS
Turn-On Rise Time	t_r			40		
Turn-Off Delay Time	$t_{d(off)}$			48		
Turn-Off Fall Time	t_f			22		
Drain-Source Diode Characteristics and Maximum Ratings						
Body Diode Reverse Recovery Time	t_{rr}	$V_{DD} = 75V, I_F = 20A$		86		nS
Body Diode Reverse Recovery Charge	Q_{rr}	$di/dt = 100 A/\mu s,$		265		nC
Peak Reverse Recovery Current	I_{RRM}			5		
Maximum Body-Diode Continuous Current	I_S				65	
Maximum Body-Diode Current (Pulsed)	I_{SM}				260	
Diode Forward Voltage	V_{SD}	$V_{GS} = 0 V, I_S = 1A$		0.68		V

Notes:

1. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

Typical Characteristics

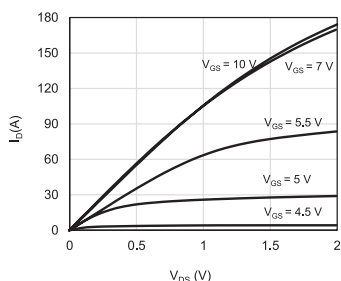


Figure 1: On-Region Characteristics

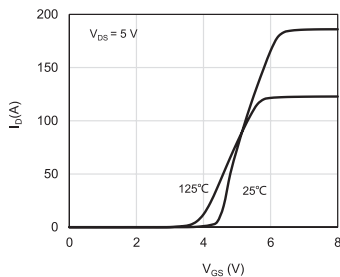


Figure 2: Transfer Characteristics

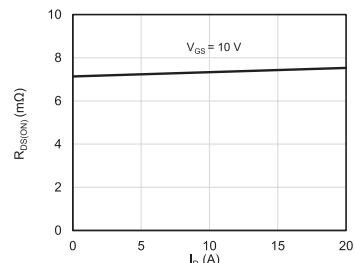


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

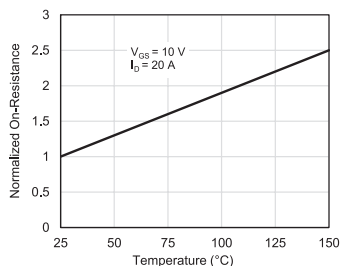


Figure 4: On-Resistance vs. Junction Temperature

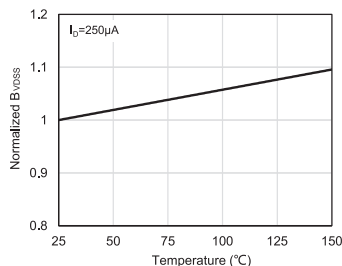


Figure 5: Breakdown Voltage vs. Junction Temperature

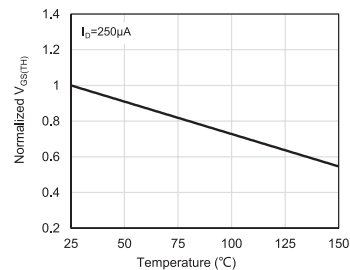
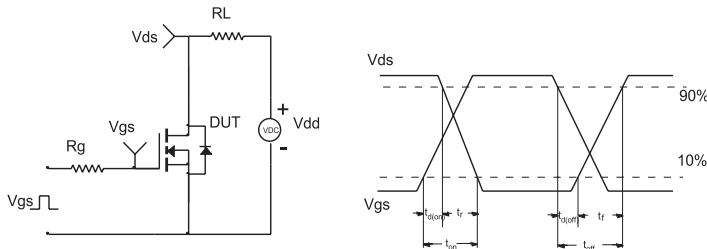


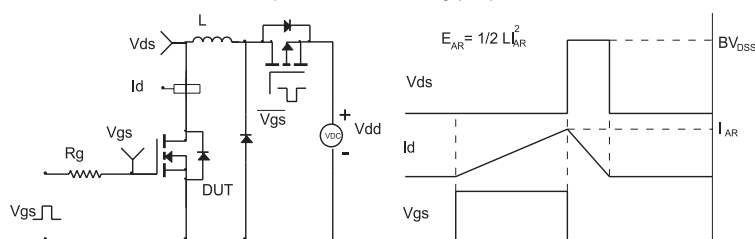
Figure 6: Threshold Voltage vs. Junction Temperature

N Channel MOSFET

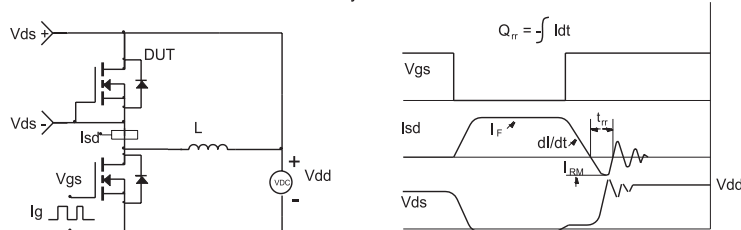
Resistive Switching Test Circuit & Waveforms



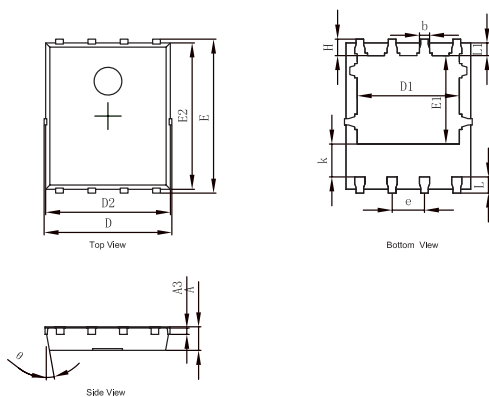
Undamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



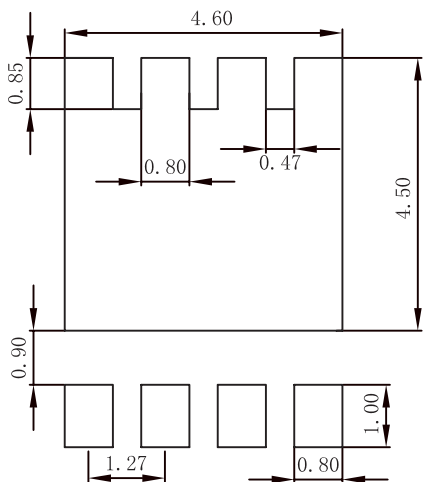
Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°

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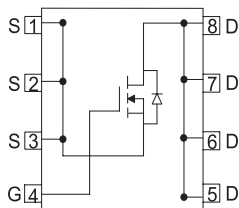
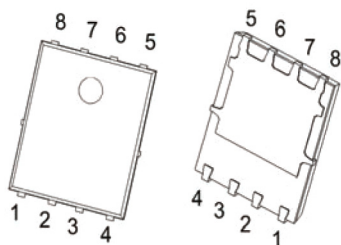
Suggested Pad Layout



Notes

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference purposes only.

Diagram



Part Number Table

Description	Part Number
N Channel MOSFET, 65A, 150V	2KK6040DFN

Dimensions : Millimetres

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