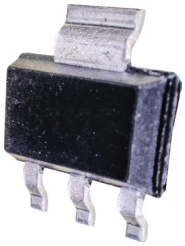
P Channel MOSFET

multicomp PRO

RoHS Compliant



Features

- $V_{DS\ (V)}$ =30V
- I_D =-5A
- $R_{DS(ON)}$ < 65mΩ (V_{GS} =-10V)
- $R_{DS(ON)}$ < 100mΩ (V_{GS} =-4.5V)

Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current, VGS @ -10V	(Note 1a)	I_D	-5	A
Pulsed Drain Current		I_{DM}	-15	
Continuous Drain-Source Diode Forward Current		I_S	-2.5	
Maximum Power Dissipation	(Note 1a)	P_D	3	W
	(Note 1b)		1.3	
	(Note 1c)		1.1	
Thermal Resistance, Junction- to-Ambient	(Note 1a)	$R_{\theta JA}$	42	°C/W
Thermal Resistance, Junction- to-Case	(Note 1)	$R_{\theta JC}$	12	
Operating and Storage Temperature Range		T_J, T_{STG}	-65 to + 150	°C

Note 1: $R^{\theta}JA$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. $R^{\theta}JC$ is guaranteed by design while $R^{\theta}CA$ is defined by users. For general reference: Applications on 4.5" × 5" FR-4 PCB under still air environment. typical $R^{\theta}JA$ is found to be:

a. 42°C/W when mounted on a 1 in^2 pad of 2oz copper.

b. 95°C/W when mounted on a 0.066in^2 pad of 2oz copper.

c. 110°C/W when mounted on a 0.00123in^2 pad of 2oz copper.

Electrical Characteristics (TA = 25°C unless otherwise noted)

Characteristic	Symbol	Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-to-Source Breakdown Voltage	V_{DSS}	I_D=250µA, V_{GS}=0V	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V, V_{GS}=0V			-1	µA
		V_{DS}=-24V, V_{GS}=0V, T_J = 55°C			-10	
Gate-Body Leakage Current	$I_{GSS)}$	V_{DS}=0V, V_{GS}=±20V			±100	nA
On Characteristics (Note 1)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=-250µA	-1	-1.6	-2.8	V

Characteristic	Symbol	Conditions	Min	Typ	Max	Unit
Static Drain-Source On-Resistance	$R_{DS(On)}$	V_{GS}=-10V, I_D=-5A			65	mΩ
		V_{GS}=-10V, I_D=-5A, T_J = 125°C			130	
		V_{GS}=-4.5V, I_D=-6A			100	
On-State Drain Current	$I_{D(on)}$	V_{GS} = -10 V , V_{DS} = - 5 V	-15			A
		V_{GS} = -4.5 V, V_{DS} = - 5 V	-5			
Forward Transconductance	g_{FS}	V_{DS}=-10V, I_D=--5A		7		S
Dynamic Characteristics (Note 2)						
Input Capacitance	C_{iss}	V_{DS}=-15V, V_{GS}=0V, f=1MHz		690		pF
Output Capacitance	C_{oss}			430		
Reverse Transfer Capacitance	C_{RSS}			160		
Switching Characteristics (Note 2)						
Turn-On DelayTime	$t_{d(on)}$	V_{DD} = -10 V, I_D = -1 A, V_{GEN} = -10 V, R_{GEN} = 6Ω		9	20	nS
Turn-On Rise Time	t_r			20	30	
Turn-Off DelayTime	$t_{d(off)}$			40	50	
Turn-Off Fall Time	t_f			19	40	
Total Gate Charge	Q_g	V_{DS} = -10 V, I_D = -5 A, V_{GS} = -10 V		22	30	nC
Gate Source Charge	Q_{gs}			3.2		
Gate Drain Charge	Q_{gd}			5.2		
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 2)	V_{SD}	I_S=-2.5A,V_{GS}=0V			-1.2	V
Reverse Recovery Time	t_{rr}	V_{GS}=0V, I_F=-2.5 A, dIF/dt=100 A/μs			100	nS

NOTES:

1. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
2. Guaranteed by design, not subject to production

Typical Characterisitics

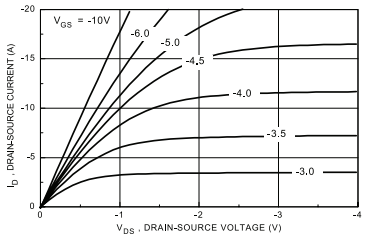


Figure 1. On-Region Characteristics.

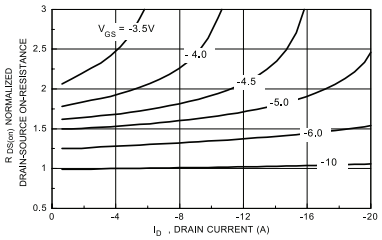


Figure 2. On-Resistance Variation with Gate Voltage and Drain Current.

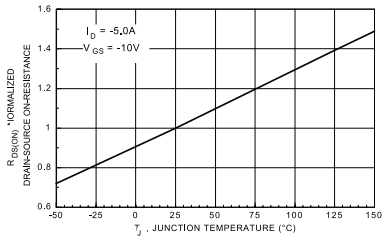


Figure 3. On-Resistance Variation with Temperature.

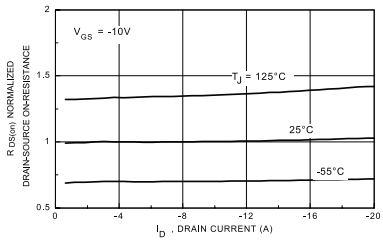


Figure 4. On-Resistance Variation with Drain Current and Temperature.

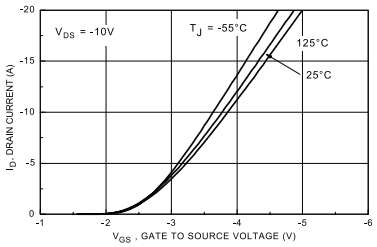


Figure 5. Transfer Characteristics.

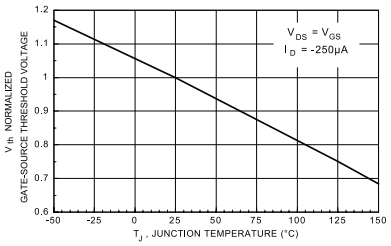


Figure 6. Gate Threshold Variation with Temperature.

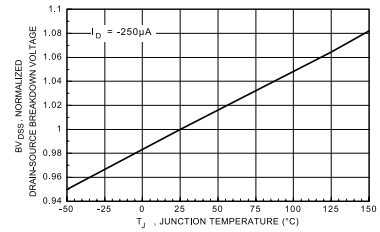


Figure 7. Breakdown Voltage Variation with Temperature.

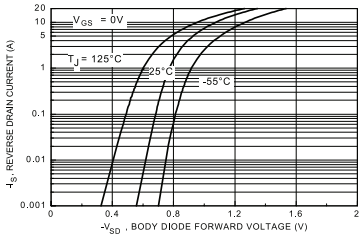


Figure 8. Body Diode Forward Voltage Variation with Current and Temperature.

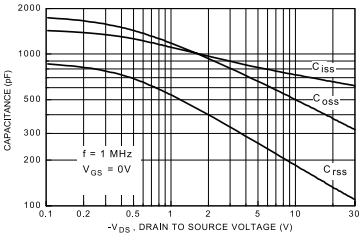


Figure 9. Capacitance Characteristics.

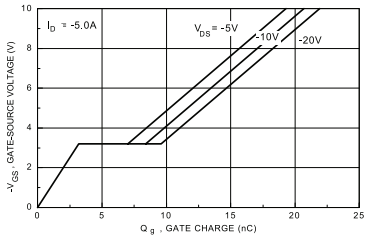


Figure 10. Gate Charge Characteristics.

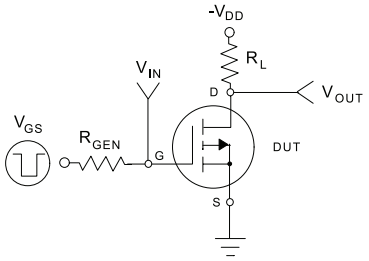


Figure 11. Switching Test Circuit.

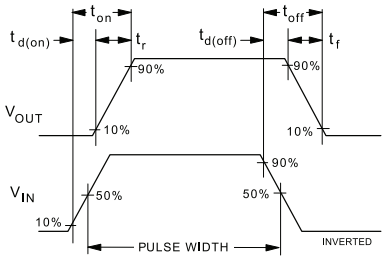


Figure 12. Switching Waveforms.

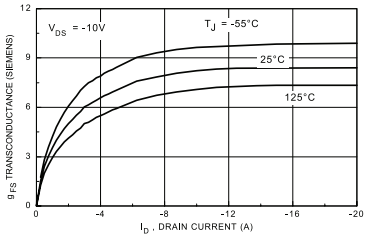


Figure 13. Transconductance Variation with Drain Current and Temperature.

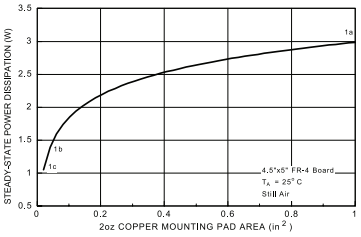


Figure 14. SOT-223 Maximum Steady- tate Power Dissipation versus Copper Mounting Pad Area.

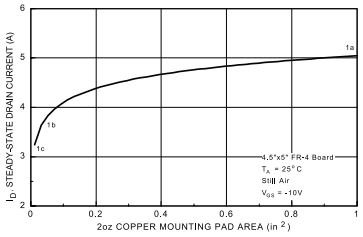


Figure 15. Maximum Steady-State Drain Current versus Copper Mounting Pad Area.

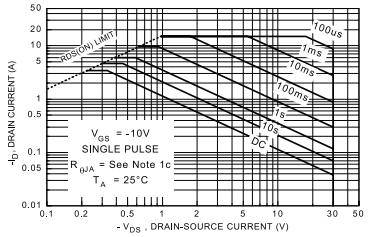


Figure 16. Maximum Safe Operating Area.

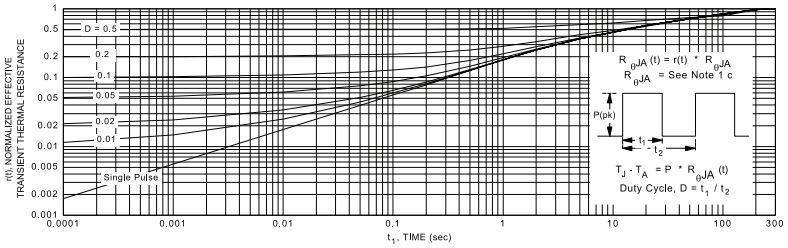
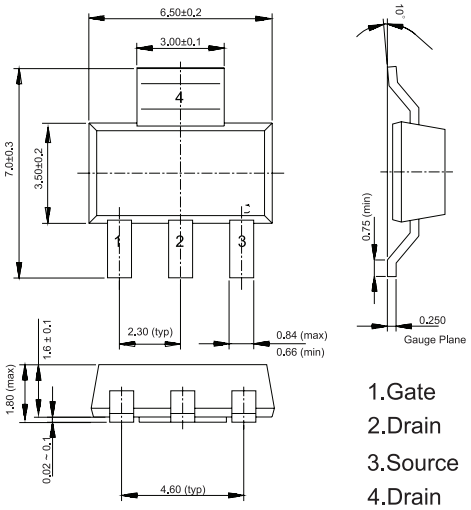
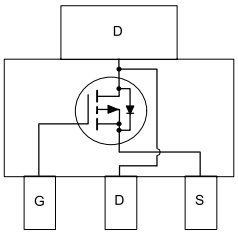


Figure 17. Transient Thermal Response Curve.
Note: Thermal characterization performed using the conditions described in note 1c. Transient thermal response will change depending on the circuit board design.

Diagram





1.Gate
2.Drain
3.Source
4.Drain

Dimensions : Millimetres

Part Number Table

Description	Part Number
P Channel MOSFET, 5A, 30V	NDT452AP

Important Notice : This data sheet and its contents (the “Information”) belong to the members of the AVNET group of companies (the “Group”) or are licensed to it. No licence is granted for the use of it other than for information purposes in connection with the products to which it relates. No licence of any intellectual property rights is granted. The Information is subject to change without notice and replaces all data sheets previously supplied. The Information supplied is believed to be accurate but the Group assumes no responsibility for its accuracy or completeness, any error in or omission from it or for any use made of it. Users of this data sheet should check for themselves the Information and the suitability of the products for their purpose and not make any assumptions based on information included or omitted. Liability for loss or damage resulting from any reliance on the Information or use of it (including liability resulting from negligence or where the Group was aware of the possibility of such loss or damage arising) is excluded. This will not operate to limit or restrict the Group’s liability for death or personal injury resulting from its negligence. Multicomp Pro is the registered trademark of Premier Farnell Limited 2019.