

N-channel Enhancement Mode Power MOSFET

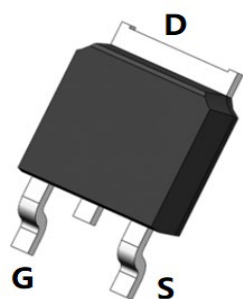
Features

- $V_{DS} = 200\text{ V}$, $I_D = 8\text{ A}$
 $R_{DS(ON)} < 260\text{ m}\Omega$ @ $V_{GS} = 10\text{ V}$
 $R_{DS(ON)} < 300\text{ m}\Omega$ @ $V_{GS} = 4.5\text{ V}$

General Features

- Advanced Trench Technology
- Provide Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free and Green Available

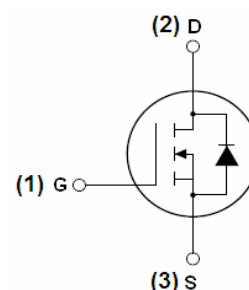
100% UIS TESTED!
100% ΔV_{ds} TESTED!



TO-252-2L Top View



Pin Assignment



Schematic Diagram

Absolute Maximum Ratings ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	200	
Gate-Source Voltage	V_{GS}	± 20	
Drain Current-Continuous	I_D	8	
Drain Current-Continuous($T_C = 100^\circ\text{C}$)	$I_D(100^\circ\text{C})$	5	A
Pulsed Drain Current	I_{DM}	20	
Maximum Power Dissipation	P_D	55	
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^\circ\text{C}$

Thermal Characteristic

Thermal Resistance, Junction-to-Case ^(Note 2)	$R_{\theta JC}$	2.3	$^\circ\text{C/W}$
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Electrical Characteristics ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	200	215	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=200V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1		3.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=4.5A$	-	260		m Ω
Forward Transconductance	g_{FS}	$V_{DS}=25V, I_D=4.5A$	3	-	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V,$ $F=1.0MHz$		540		PF
Output Capacitance	C_{oss}			90		PF
Reverse Transfer Capacitance	C_{rss}			35		PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=100V, I_D=4.5A$ $V_{GS}=10V, R_{GEN}=5\Omega$	-	6.4	-	nS
Turn-on Rise Time	t_r		-	11	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	20	-	nS
Turn-Off Fall Time	t_f		-	12	-	nS
Total Gate Charge	Q_g	$V_{DS}=160V, I_D=4.5A,$ $V_{GS}=10V$	-	16	-	nC
Gate-Source Charge	Q_{gs}		-	3.4	-	nC
Gate-Drain Charge	Q_{gd}		-	5.1	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	$V_{GS}=0V, I_S=8A$	-	-	1.2	V
Diode Forward Current (Note 2)	I_S		-	-	8	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

Typical Electrical and Thermal Characteristics (Curves)

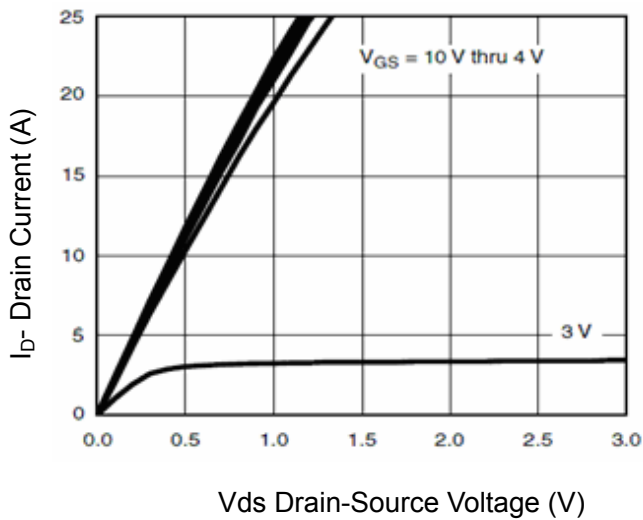


Figure 1 Output Characteristics

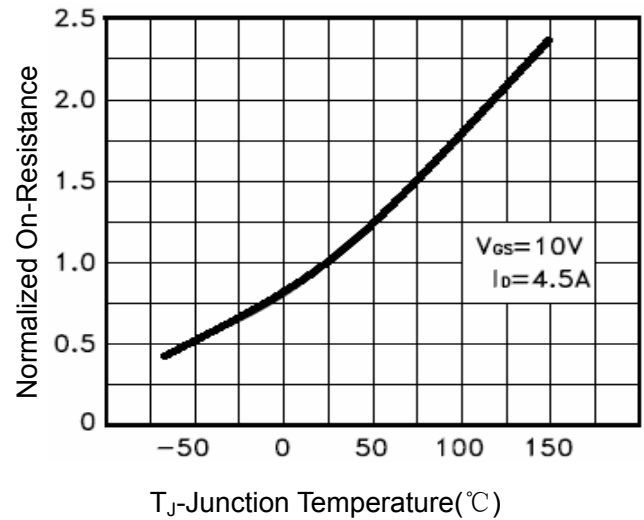


Figure 4 $R_{DS(on)}$ -Junction Temperature



Figure 2 Transfer Characteristics



Figure 5 Gate Charge



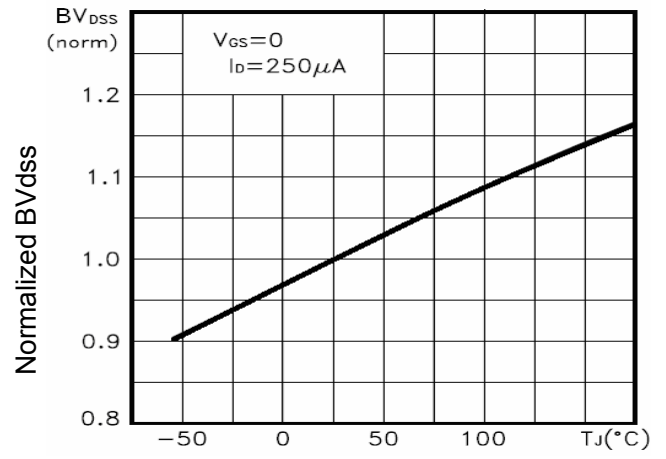
Figure 3 $R_{DS(on)}$ - Drain Current



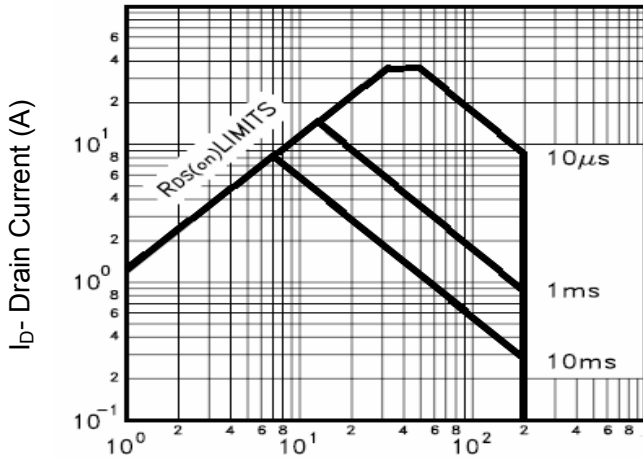
Figure 6 Source- Drain Diode Forward



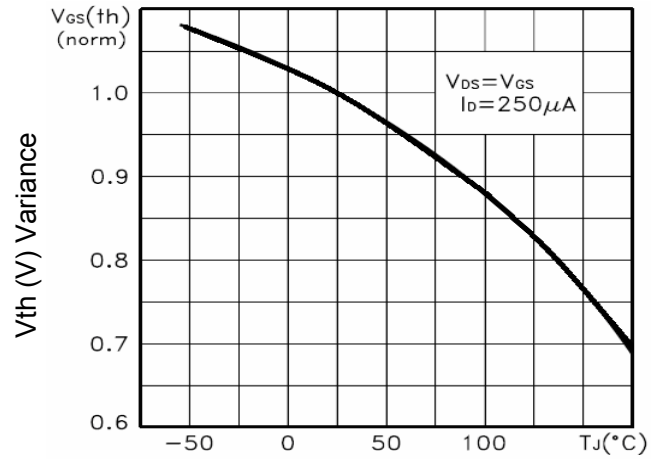
Vds Drain-Source Voltage (V)
Figure 7 Capacitance vs Vds



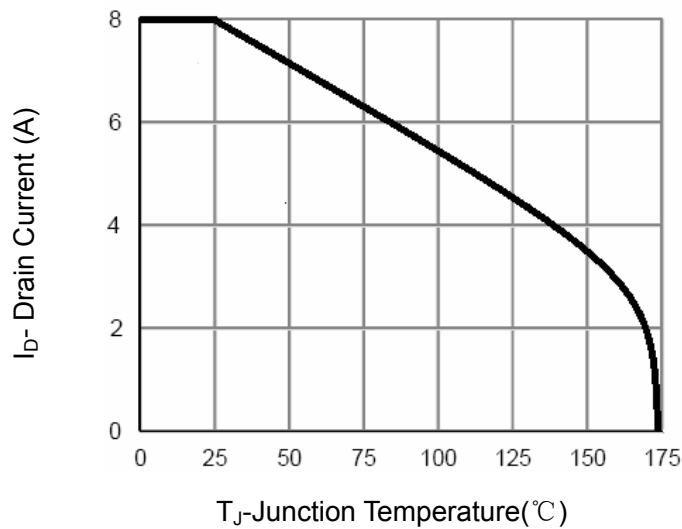
T_J-Junction Temperature(°C)
Figure 9 BV_{DSS} vs Junction Temperature



Vds Drain-Source Voltage (V)
Figure 8 Safe Operation Area



T_J-Junction Temperature(°C)
Figure 10 V_{GS(th)} vs Junction Temperature



T_J-Junction Temperature(°C)
Figure 11 Current De-rating



Figure 12 Normalized Maximum Transient Thermal Impedance