

## N-Channel Enhancement Mode Power MOSFET

- Features**

$V_{DS} = 100V$ ,

$I_D = 15.2A$

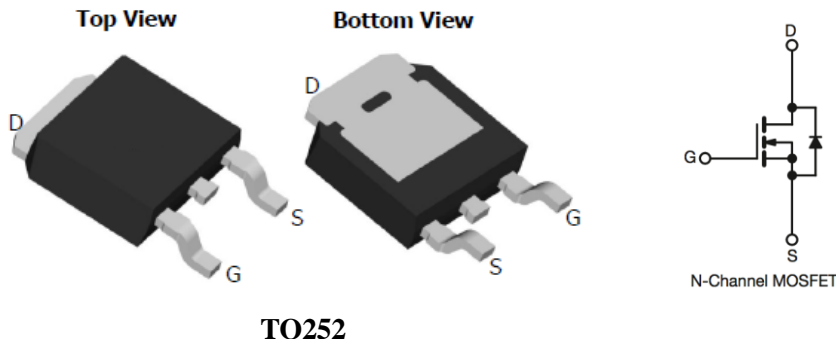
$R_{DS(ON)} @ V_{GS} = 10V$ , TYP 68mΩ

$R_{DS(ON)} @ V_{GS} = 4.5V$ , TYP 75mΩ

- General Description**

- DC-DC Converters
- DC-AC Inverters
- Motor Drives

- Pin Configurations**



- Absolute Maximum Ratings @  $T_A=25^\circ C$  unless otherwise noted**

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		$V_{DSS}$	100	V
Gate-Source Voltage		$V_{GSS}$	$\pm 20$	V
Drain Current (Continuous) *AC	$T_C=25^\circ C$	$I_D$	15.2	A
	$T_C=100^\circ C$		9.6	
Drain Current (Pulse) *B		$I_{DM}$	50	A
Power Dissipation	$T_C=25^\circ C$	$P_D$	42	W
Operating Temperature/ Storage Temperature		$T_J/T_{STG}$	-55~150	$^\circ C$

- Thermal Resistance Ratings**

Parameter		Symbol	Maximum	Unit
Maximum Junction-to-Ambient *AC	$t \leq 10s$	$R_{thJA}$	60	$^\circ C/W$
Maximum Junction-to-Case (Drain)	Steady State	$R_{thJC}$	3	

● **Electrical Characteristics** @ $T_A=25^{\circ}\text{C}$  unless otherwise noted

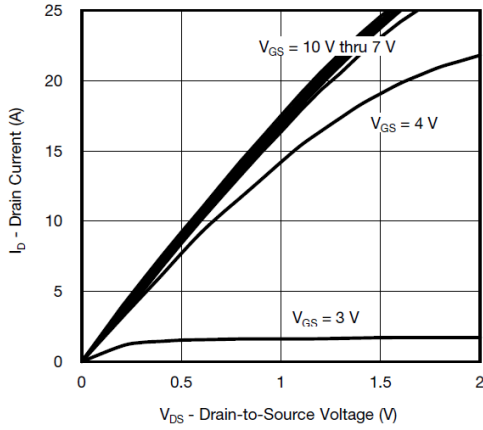
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	100	--	--	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 80V, V_{GS} = 0V$	--	--	1	$\mu A$
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_{DS} = 250\mu A$	1	1.7	2.5	V
Gate Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$	--	--	$\pm 100$	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 5A$	--	68	90	m $\Omega$
	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 3A$	--	75	100	m $\Omega$
Diode Forward Voltage	$V_{SD}$	$I_{SD} = 1A, V_{GS} = 0V$	--	0.74	1.2	V
Diode Forward Current *AC	$I_S$	$T_C = 25^{\circ}\text{C}$	--	--	15.2	A
<b>Switching</b>						
Total Gate Charge	$Q_g$	$V_{GS} = 10V, V_{DS} = 50V, I_D = 6.6A$	--	19.7	--	nC
Gate-Source Charge	$Q_{gs}$		--	3.5	--	nC
Gate-Drain Charge	$Q_{gd}$		--	4.2	--	nC
Turn-on Delay Time	$t_{d(on)}$	$V_{GEN} = 10V, V_{DD} = 50V,$ $R_L = 9.6\Omega, R_G = 1\Omega,$ $I_D = 5.2A$	--	8	--	ns
Turn-on Rise Time	$t_r$		--	11	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	17	--	ns
Turn-Off Fall Time	$t_f$		--	6	--	ns
<b>Dynamic</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 50V, V_{GS} = 0V, f = 1.0\text{MHz}$	--	855	--	pF
Output Capacitance	$C_{oss}$		--	84	--	pF
Reverse Transfer Capacitance	$C_{rss}$		--	41	--	pF

A: The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A=25^{\circ}\text{C}$ . The value in any given application depends on the user's specific board design.

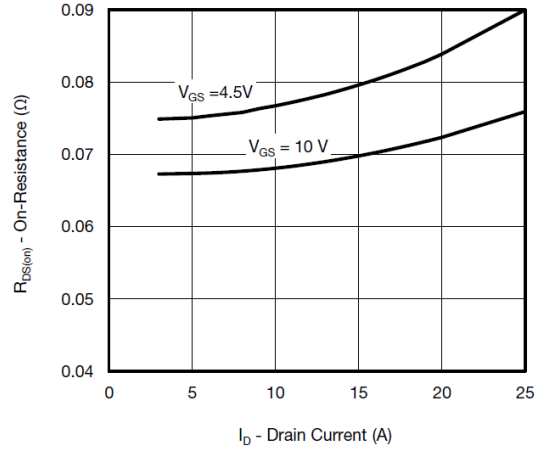
B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the  $t \leq 10s$  junction to ambient thermal resistance rating.

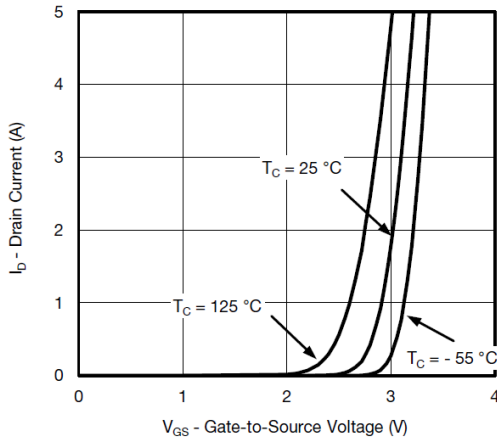
● Typical Performance Characteristics (T<sub>J</sub> = 25 °C, unless otherwise noted)



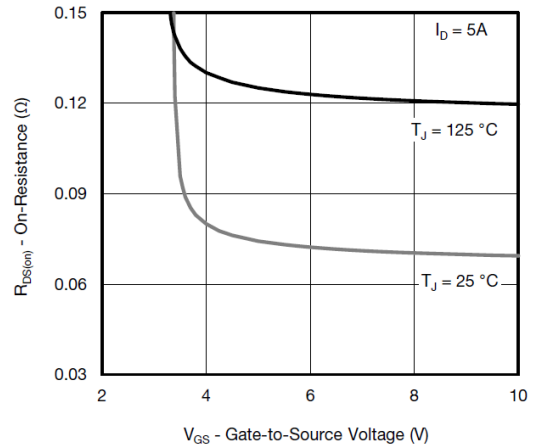
Output Characteristics



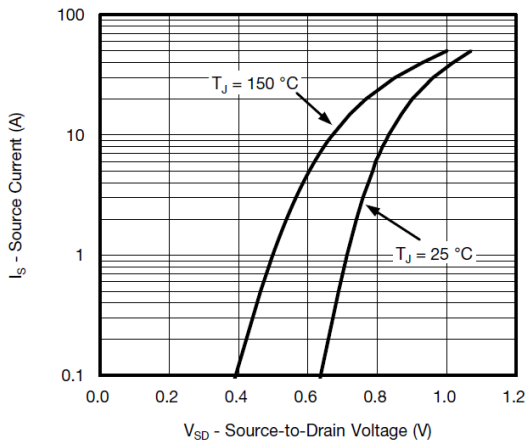
On-Resistance vs. Drain Current



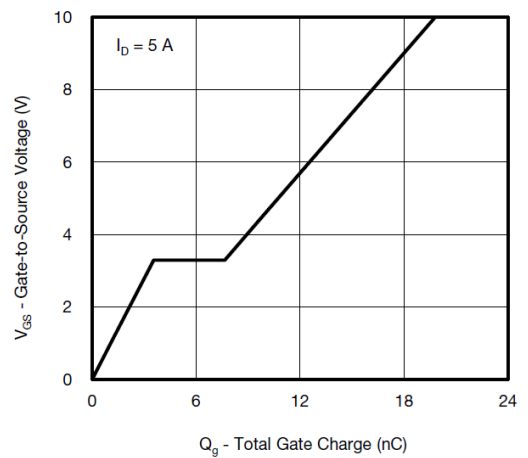
Transfer Characteristics



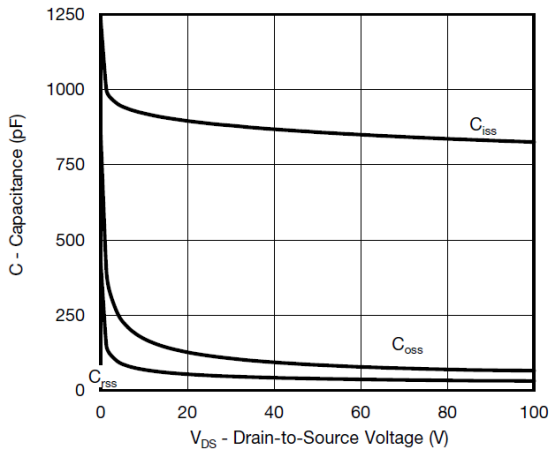
On-Resistance vs. Gate-to-Source Voltage



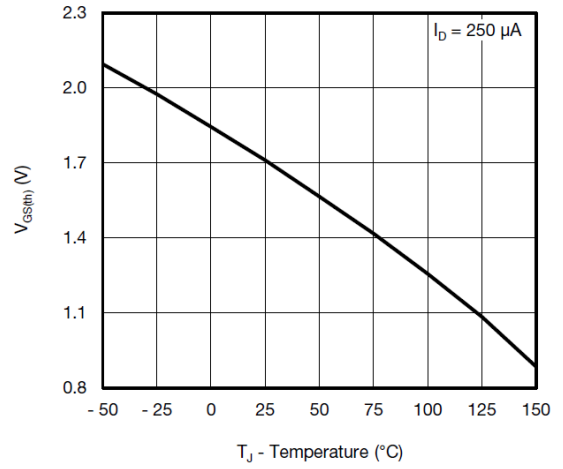
Source-Drain Diode Forward Voltage



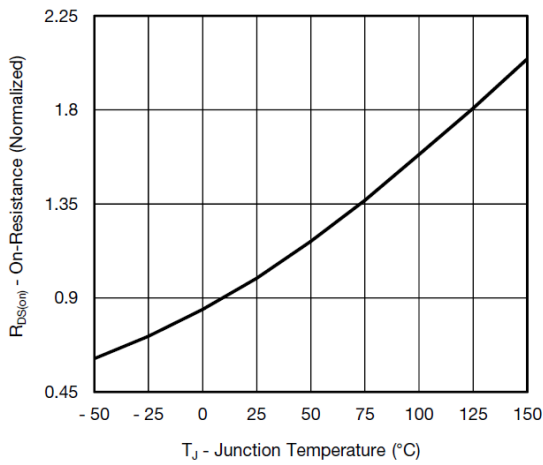
Gate Charge



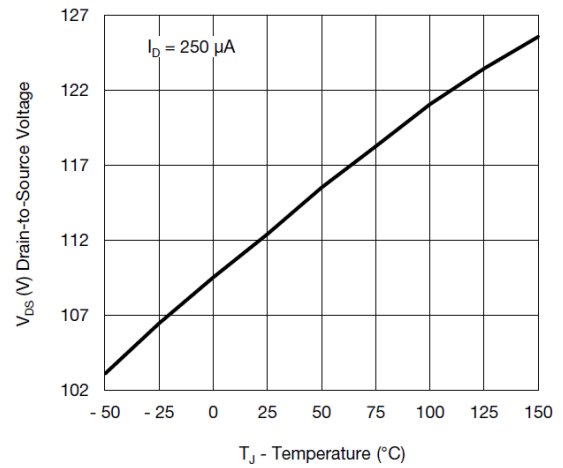
Capacitance



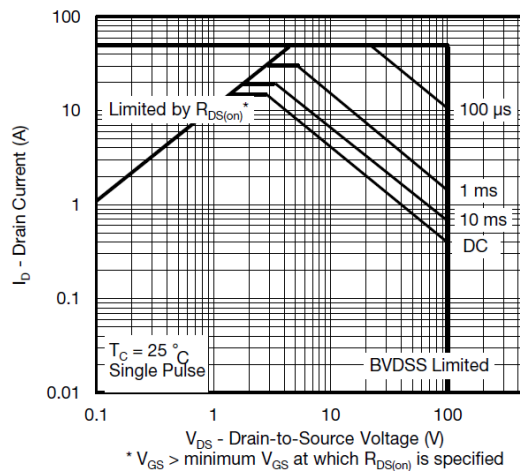
Threshold Voltage



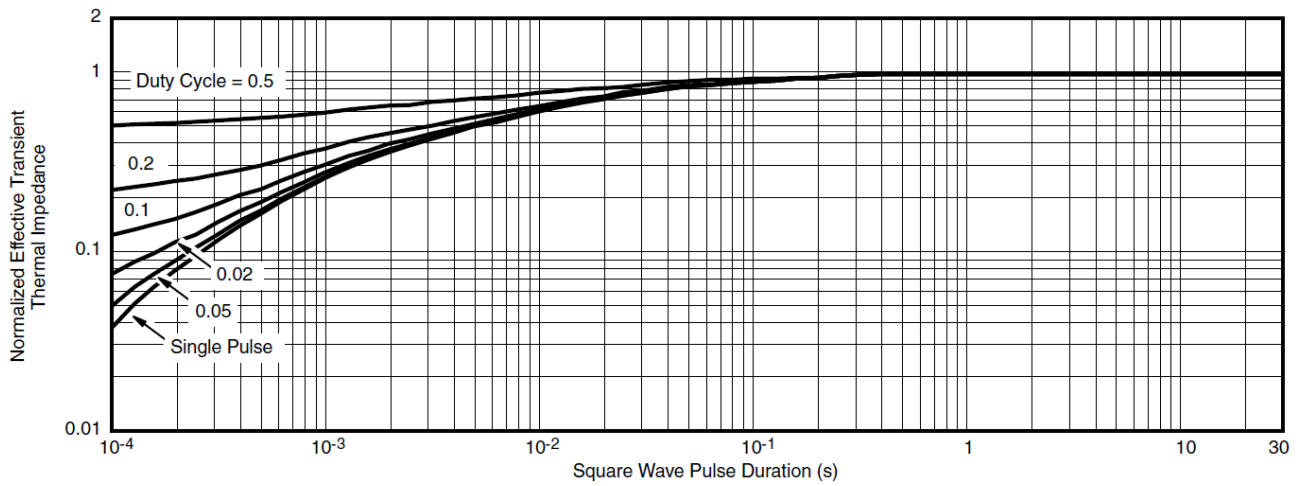
On-Resistance vs. Junction Temperature



Drain Source Breakdown vs. Junction Temperature

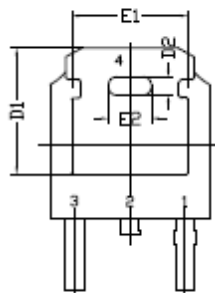
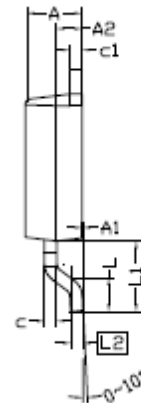
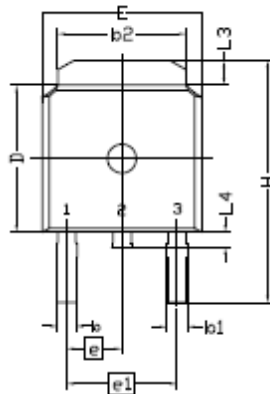


Safe Operating Area

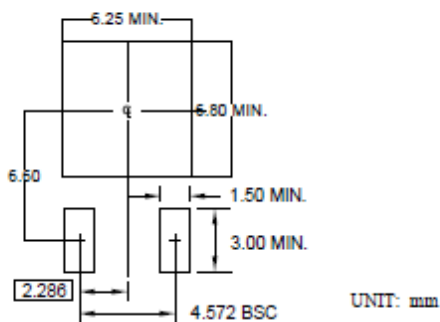


Normalized Thermal Transient Impedance, Junction-to-Case

● Package Information



RECOMMENDED LAND PATTERN



NOTE

1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS. MOLD FLASH SHOULD BE LESS THAN 6 MILS.
2. DIMENSION L IS MEASURED IN GAUGE PLANE
3. TOLERANCE 0.10 mm UNLESS OTHERWISE SPECIFIED
4. CONTROLLING DIMENSION IS MILLIMETER. CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.
5. REFER TO JEDEC TO-252 (AA)

DIMENSION	DIMENSION IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	2.184	2.286	2.388	0.086	0.090	0.094
A1	0.000	---	0.127	0.000	---	0.005
A2	0.889	1.041	1.143	0.035	0.041	0.045
b	0.635	0.762	0.889	0.025	0.030	0.035
b1	0.762	0.840	1.143	0.030	0.033	0.045
b2	4.953	5.340	5.461	0.195	0.210	0.215
c	0.450	0.508	0.610	0.018	0.020	0.024
c1	0.450	0.508	0.610	0.018	0.020	0.024
D	5.969	6.096	6.223	0.235	0.240	0.245
D1	5.210	5.249	5.380	0.205	0.207	0.212
D2	0.662	0.762	0.862	0.026	0.030	0.034
E	6.350	6.604	6.731	0.250	0.260	0.265
E1	4.318	4.826	4.901	0.170	0.190	0.193
E2	1.678	1.778	1.878	0.066	0.070	0.074
e	2.286 BSC			0.090 BSC		
e1	4.572 BSC			0.180 BSC		
H	9.398	10.033	10.414	0.370	0.395	0.410
L	1.270	1.520	2.032	0.050	0.060	0.080
L1	2.921 REF.			0.115REF.		
L2	0.408	0.508	0.608	0.016	0.020	0.024
L3	0.889	1.016	1.270	0.035	0.040	0.050
L4	0.635	---	1.016	0.025	---	0.040