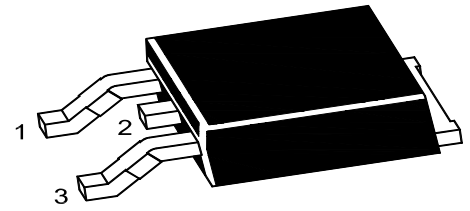


**Features**

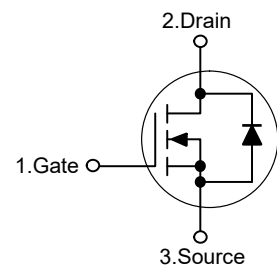
- High density cell design for ultra low  $R_{DS(on)}$
- Excellent package for good heat dissipation
- $V_{DS} = 20V, I_D = 90A$   
 $R_{DS(on)} < 4.0m\Omega @ V_{GS} = 10V$

**TO-252**

1. Gate 2.Drain 3.Source

**Applications**

- Power switching application
- Hard switched and high frequency circuits

**Schematic Diagram****Absolute Maximum Ratings**

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Drain Current-Continuous	$I_D$	90	A
Drain Current-Pulsed <sup>Note1</sup>	$I_{DM}$	360	A
Single pulse avalanche energy <sup>Note4</sup>	$E_{AS}$	250	mJ
Maximum Power Dissipation	$P_D$	90	W
Junction Temperature	$T_J$	175	°C
Storage Temperature Range	$T_{STG}$	-55 to +150	°C

**Thermal Characteristics**

Maximum Junction-to-Case <sup>Note2</sup>	$R_{\theta JC}$	1.67	°C/W
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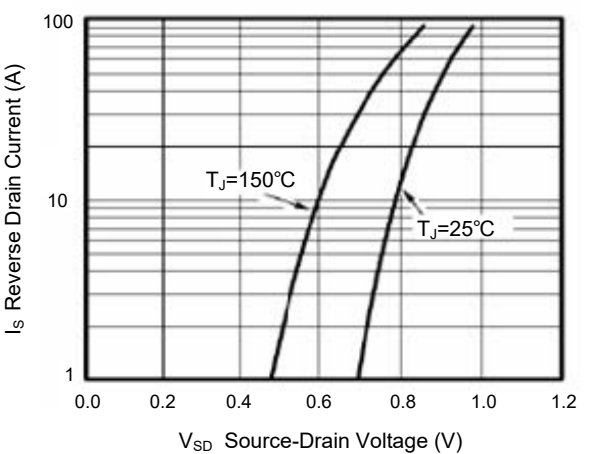
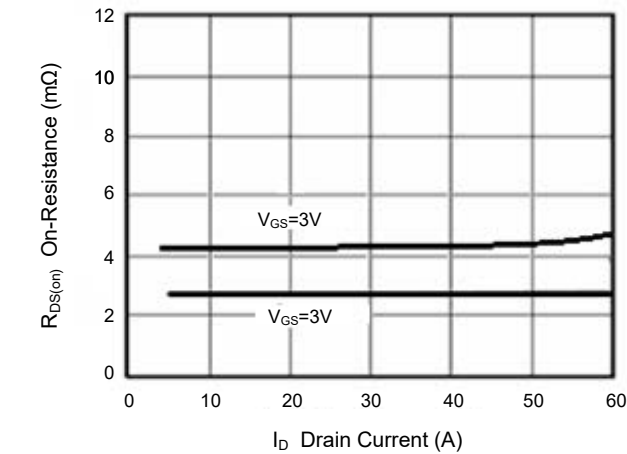
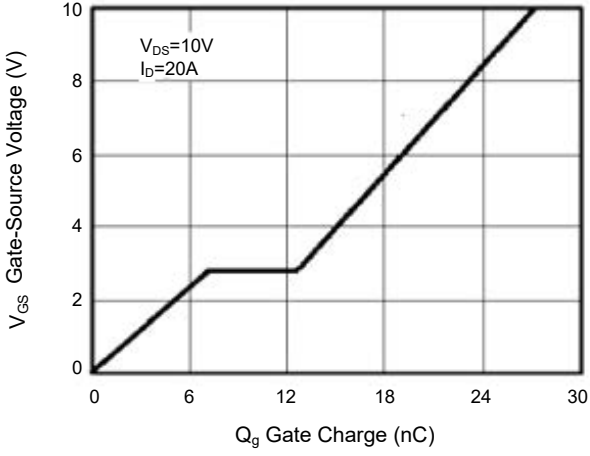
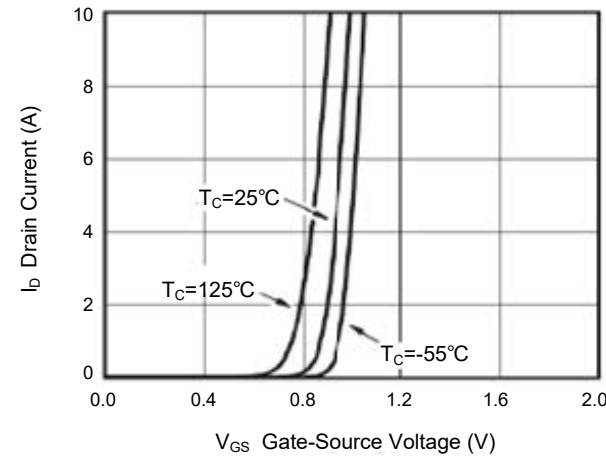
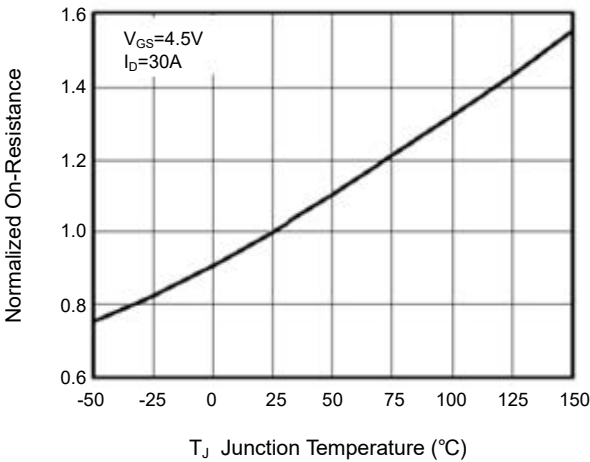
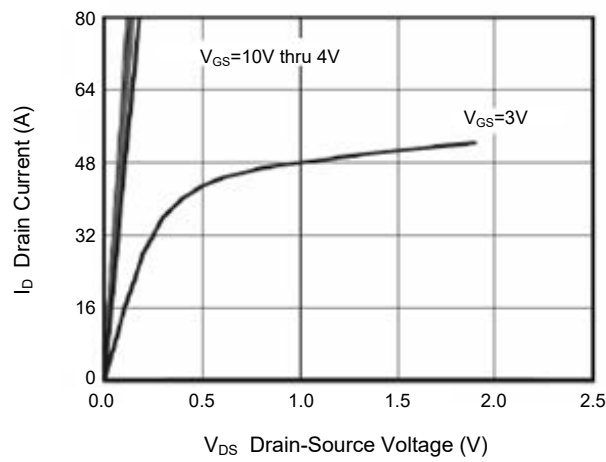
Electrical Characteristics

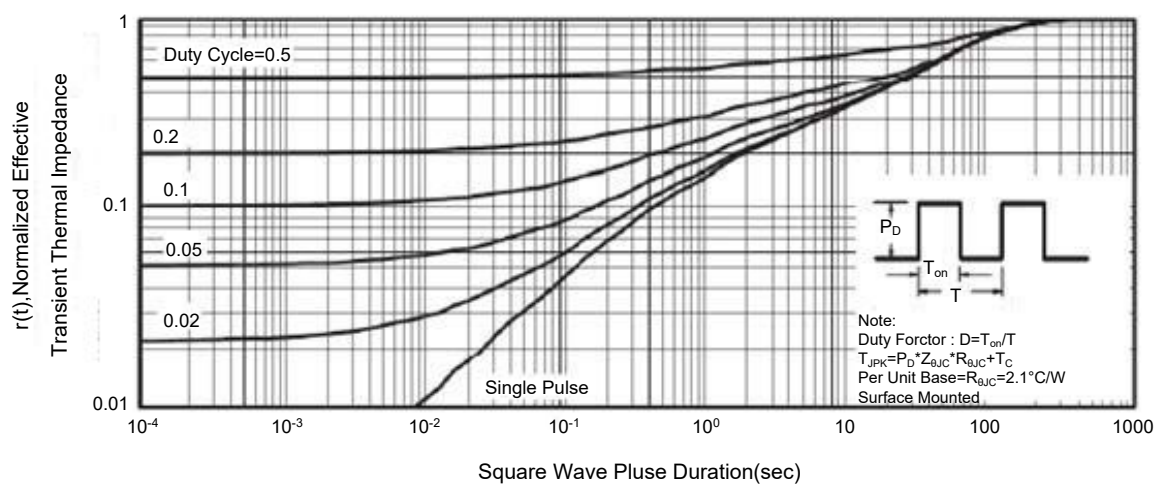
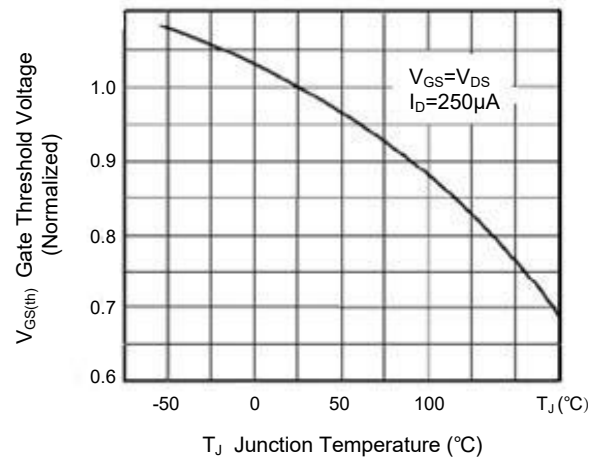
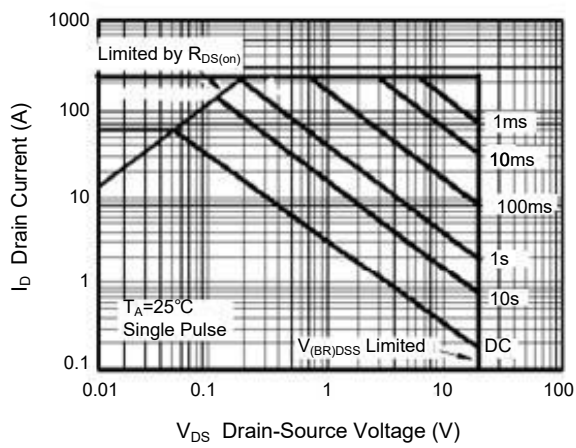
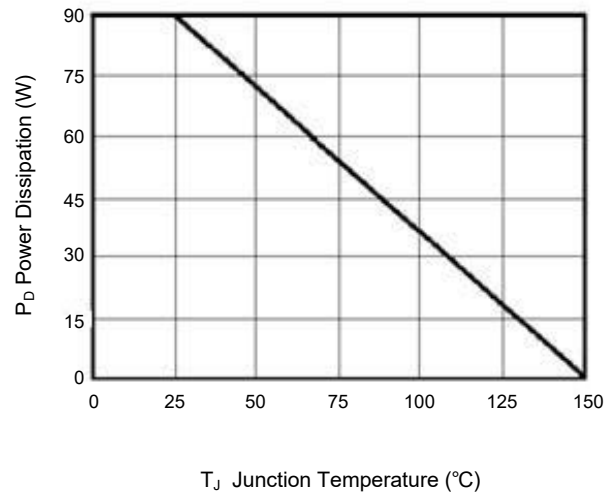
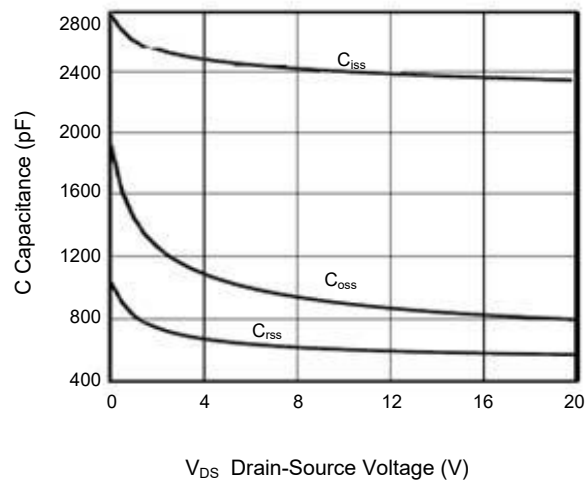
(Ta=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	20	--	--	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V	--	--	1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V	--	--	±0.1	μA
Gate Threshold Voltage <sup>Note3</sup>	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.5	0.65	1.5	V
Drain-Source On-Resistance <sup>Note3</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =45A	--	2.6	4.0	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =30A	--	2.8	4.0	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =10A	--	--	5.5	mΩ
Forward Transconductance <sup>Note3</sup>	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =45A	22	--	--	S
Dynamic Characteristics						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f=1MHz	--	2800	--	pF
Output Capacitance	C <sub>oss</sub>		--	510	--	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		--	265	--	pF
Switching Characteristics						
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =10V, I <sub>D</sub> =45A, V <sub>GS</sub> =5V, R <sub>G</sub> =1.8Ω	--	9	--	nS
Turn-on Rise Time	t <sub>r</sub>		--	24	--	nS
Turn-off Delay Time	t <sub>d(off)</sub>		--	37	--	nS
Turn-off Fall Time	t <sub>f</sub>		--	23	--	nS
Total Gate Charge	Q <sub>g</sub>	V <sub>DD</sub> =10V, I <sub>D</sub> =45A, V <sub>GS</sub> =10V	--	32	--	nC
Gate-Source Charge	Q <sub>gs</sub>		--	9	--	nC
Gate-Drain Charge	Q <sub>gd</sub>		--	11	--	nC
Source-Drain Diode Characteristics						
Diode Forward Voltage <sup>Note3</sup>	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =90A	--	--	1.5	V
Diode Forward Current <sup>Note2</sup>	I <sub>S</sub>		--	--	90	A

Note: 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.  $E_{AS}$  condition :  $T_J=25^{\circ}C, V_{DD}=15V, V_G=10V, L=1.0mH, R_g=25\Omega$ .

Typical Characteristic Curves

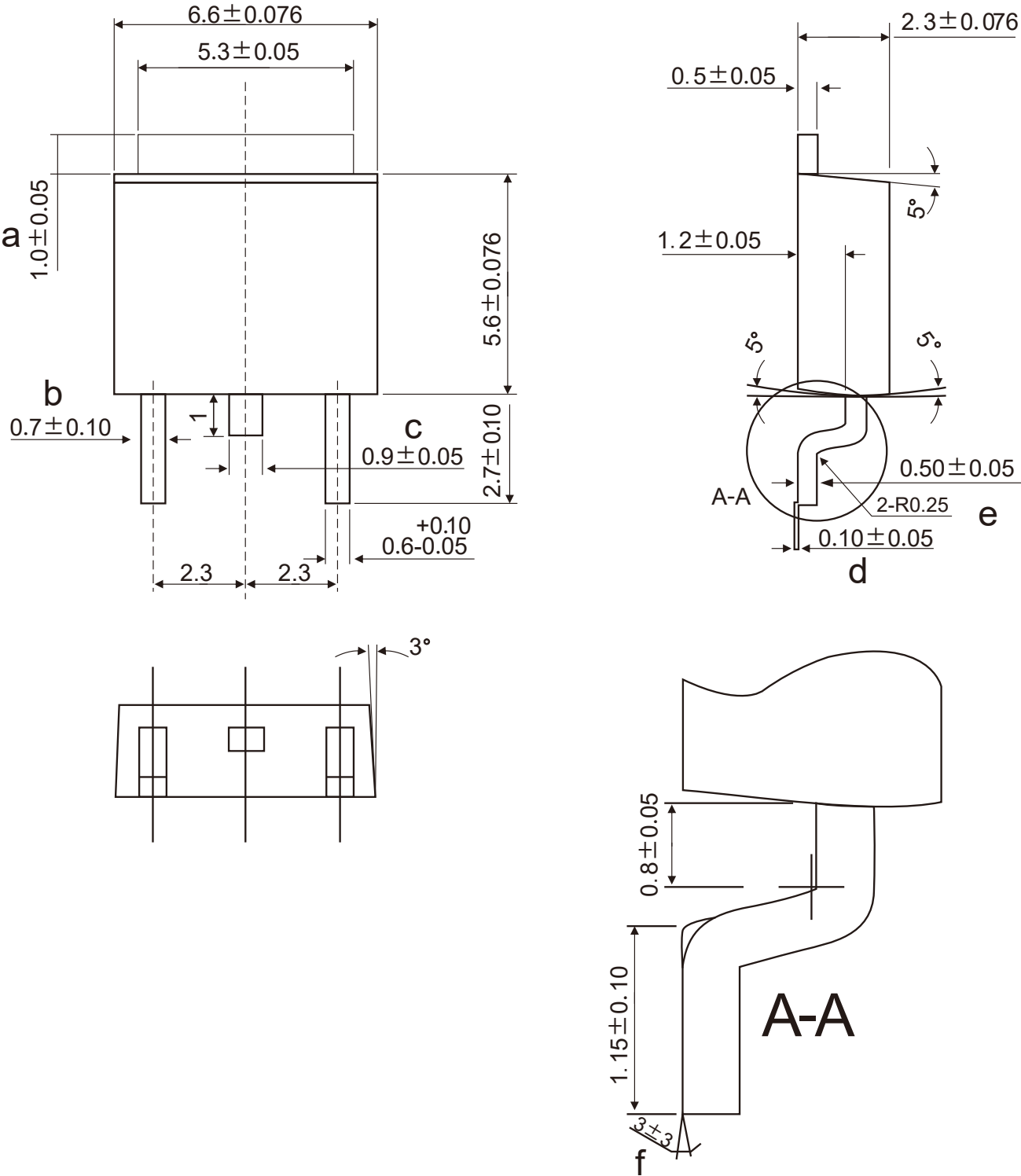




Package Outline


TO-252

Dimensions in mm



Contact Information

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For additional information, please contact your local Sales Representative.

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Product Specification Statement

The product specification aims to provide users with a reference regarding various product parameters, performance, and usage. It presents certain aspects of the product's performance in graphical form and is intended solely for users to select product and make product comparisons, enabling users to better understand and evaluate the characteristics and advantages of the product. It does not constitute any commitment, warranty, or guarantee.

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