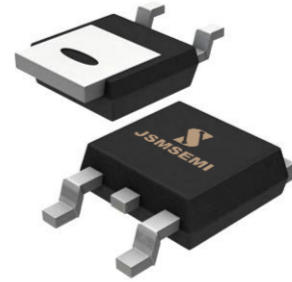


## Description:

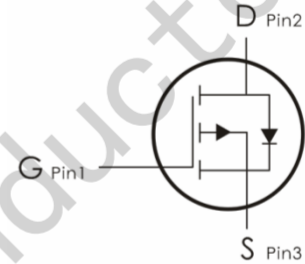
This P-Channel MOSFET uses advanced trench technology and design to provide excellent  $R_{DS(on)}$  with low gate charge.

It can be used in a wide variety of applications.



## Features:

- 1)  $V_{DS}=-100V, I_D=-12A, R_{DS(ON)}<200m\Omega @V_{GS}=-10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra  $R_{DS(ON)}$ .
- 5) Excellent package for good heat dissipation.



## Absolute Maximum Ratings: ( $T_C=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
$V_{DS}$	Drain-Source Voltage	-100	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current <sup>1</sup>	-12	A
	Continuous Drain Current-TC=100°C	-9.2	
	Pulsed Drain Current <sup>2</sup>	-52	
$E_{AS}$	Single Pulse Avalanche Energy <sup>3</sup>	65	mJ
$P_D$	Power Dissipation <sup>4</sup>	40	W
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 to +150	°C

## Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case <sup>(Note 2)</sup>	3.13	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient <sup>1</sup>	---	

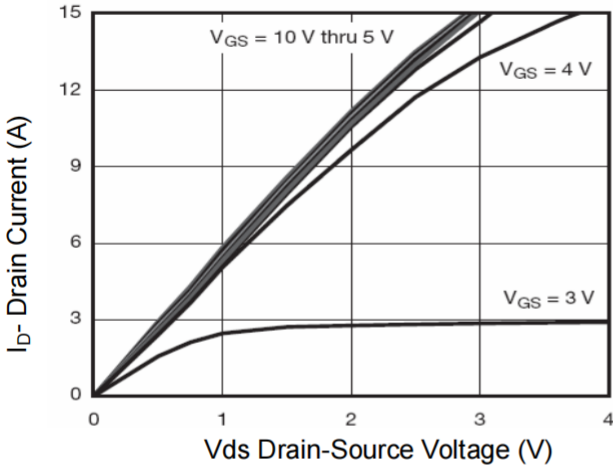
**Electrical Characteristics:** ( $T_C=25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	-100	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=-100V$	---	---	1	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	$\pm 10$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	-1	-1.9	-3	V
$R_{DS(ON)}$	Drain-Source On Resistance <sup>2</sup>	$V_{GS}=-10V, I_D=16A$	---	170	200	m $\Omega$
		$V_{GS}=-4.5V, I_D=A$	---	---	---	
$G_{FS}$	Forward Transconductance	$V_{DS}=-50V, I_D=-10A$	12	---	---	S
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=-25V, V_{GS}=0V, f=1\text{MHz}$	---	760	---	pF
$C_{oss}$	Output Capacitance		---	260	---	
$C_{rss}$	Reverse Transfer Capacitance		---	170	---	
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=-50V, I_D=10A,$ $R_{GEN}=9.1\Omega, V_{GS}=-10V$	---	14	---	ns
$t_r$	Rise Time		---	18	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	50	---	ns
$t_f$	Fall Time		---	18	---	ns
$Q_g$	Total Gate Charge	$V_{GS}=-10V, V_{DS}=-50V,$ $I_D=-10A$	---	25	---	nC
$Q_{gs}$	Gate-Source Charge		---	5	---	nC
$Q_{gd}$	Gate-Drain "Miller" Charge		---	7	---	nC
<b>Drain-Source Diode Characteristics</b>						
$V_{SD}$	Source-Drain Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=10A$	---	---	-1.2	V
$I_S$	Diode Forward Current (Note 2)	$V_D=V_G=0V$	---	---	-13	A
$T_{rr}$	Reverse Recovery Time	$T_J = 25^\circ\text{C}, I_F = -10A$ $di/dt = 100A/\mu s$ (Note3)	---	35	---	ns
$Q_{rr}$	Reverse Recovery Charge		---	46	---	nC

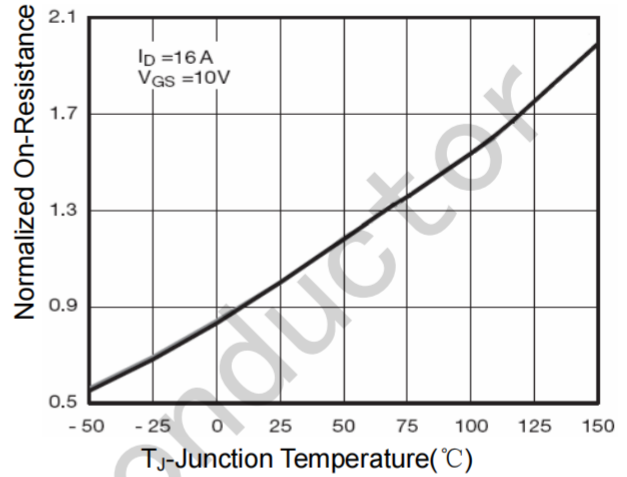
**Notes:**

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  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production
5.  $E_{AS}$  condition:  $T_J=25^\circ\text{C}$ ,  $V_{DD}=-50\text{V}$ ,  $V_G=-10\text{V}$ ,  $L=0.5\text{mH}$ ,  $R_g=25\Omega$

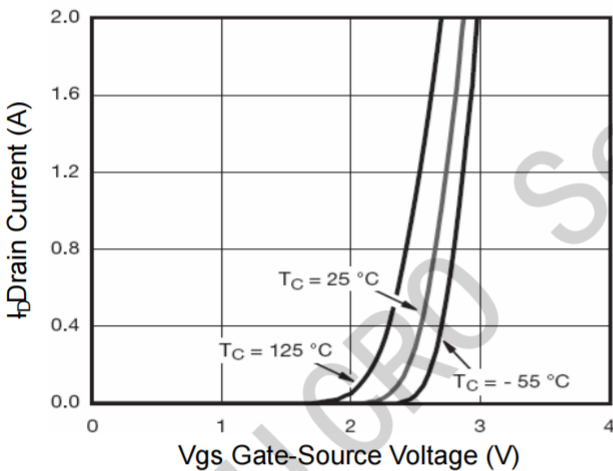
**Typical Characteristics:** ( $T_C=25^\circ\text{C}$  unless otherwise noted)



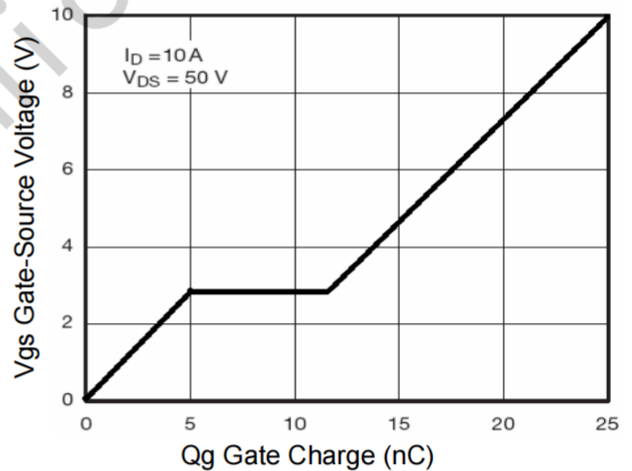
**Figure 1 Output Characteristics**



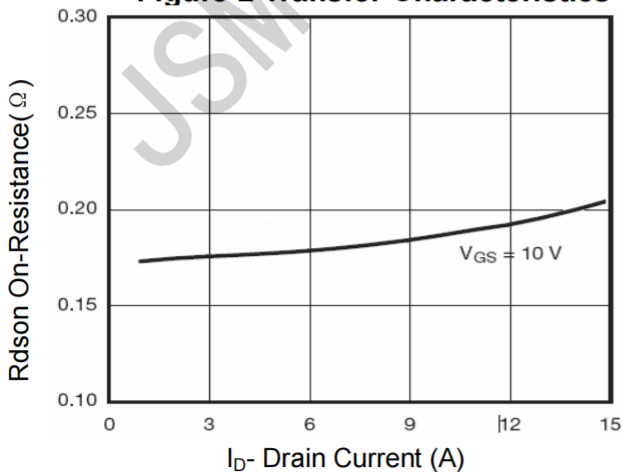
**Figure 4 Rdson-Junction Temperature**



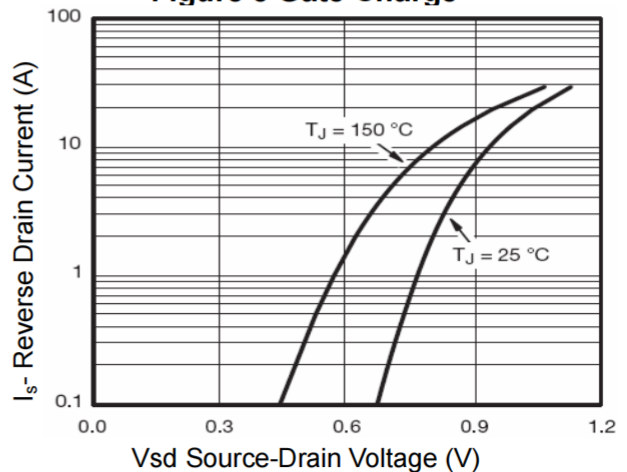
**Figure 2 Transfer Characteristics**



**Figure 5 Gate Charge**



**Figure 3 Rdson- Drain Current**



**Figure 6 Source- Drain Diode Forward**

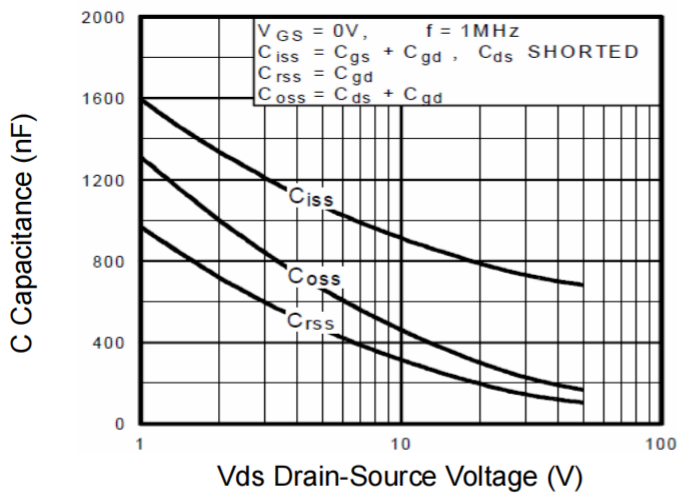


Figure 7 Capacitance vs Vds

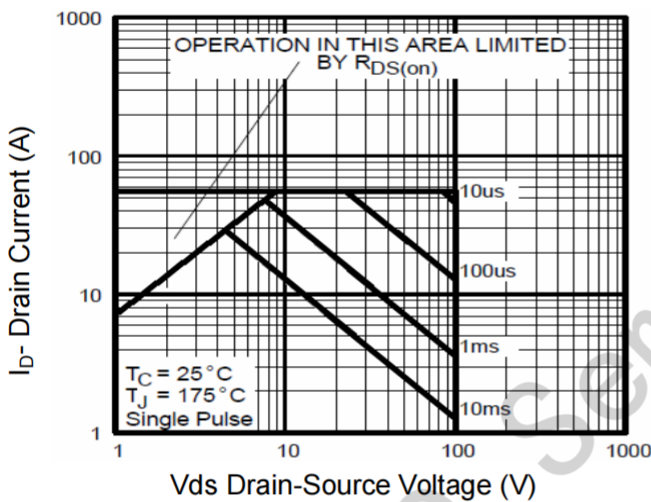
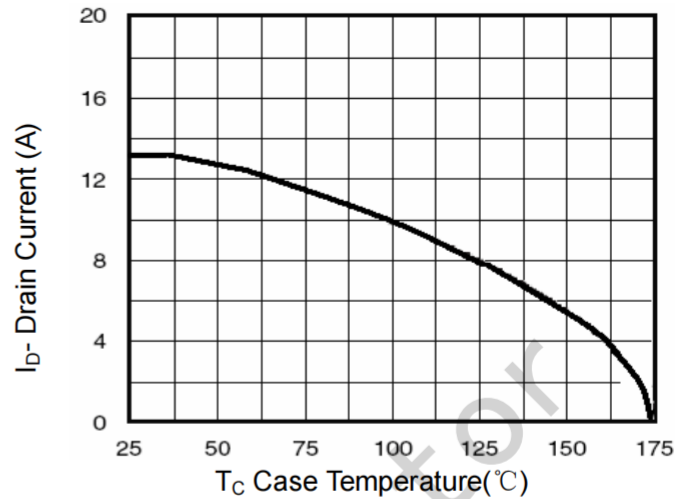


Figure 8 Safe Operation Area

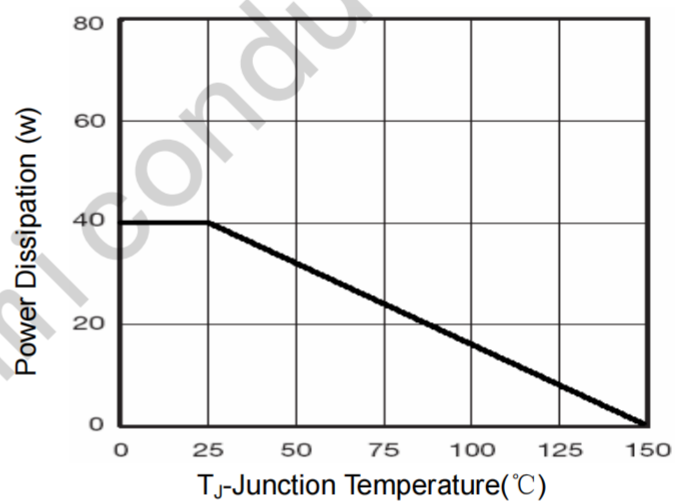


Figure 10 Power De-rating

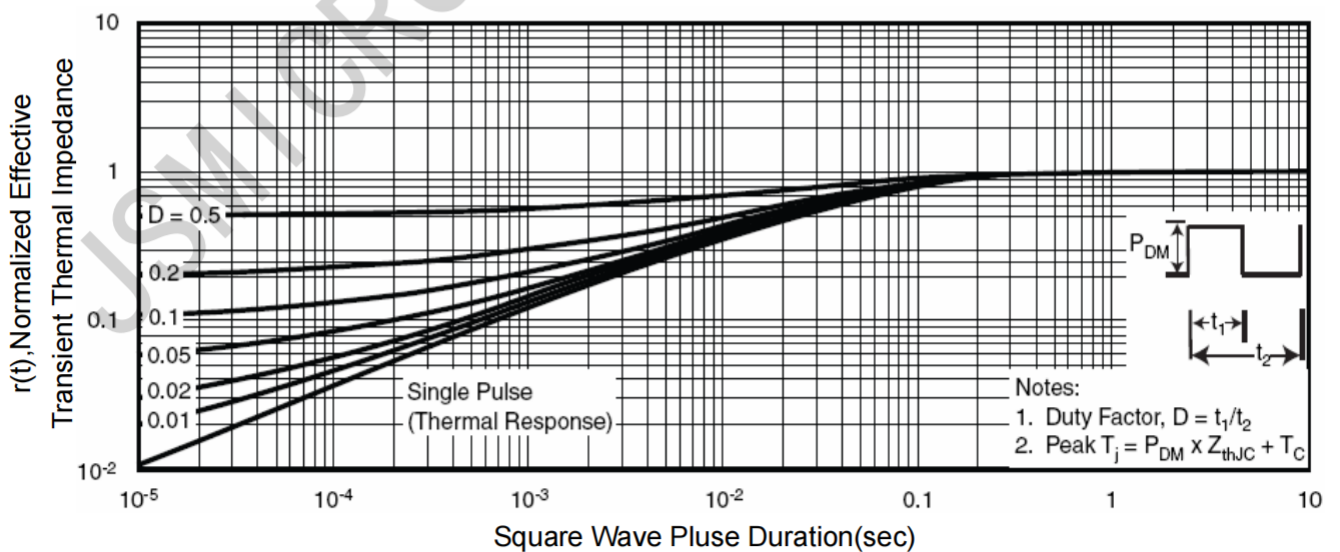
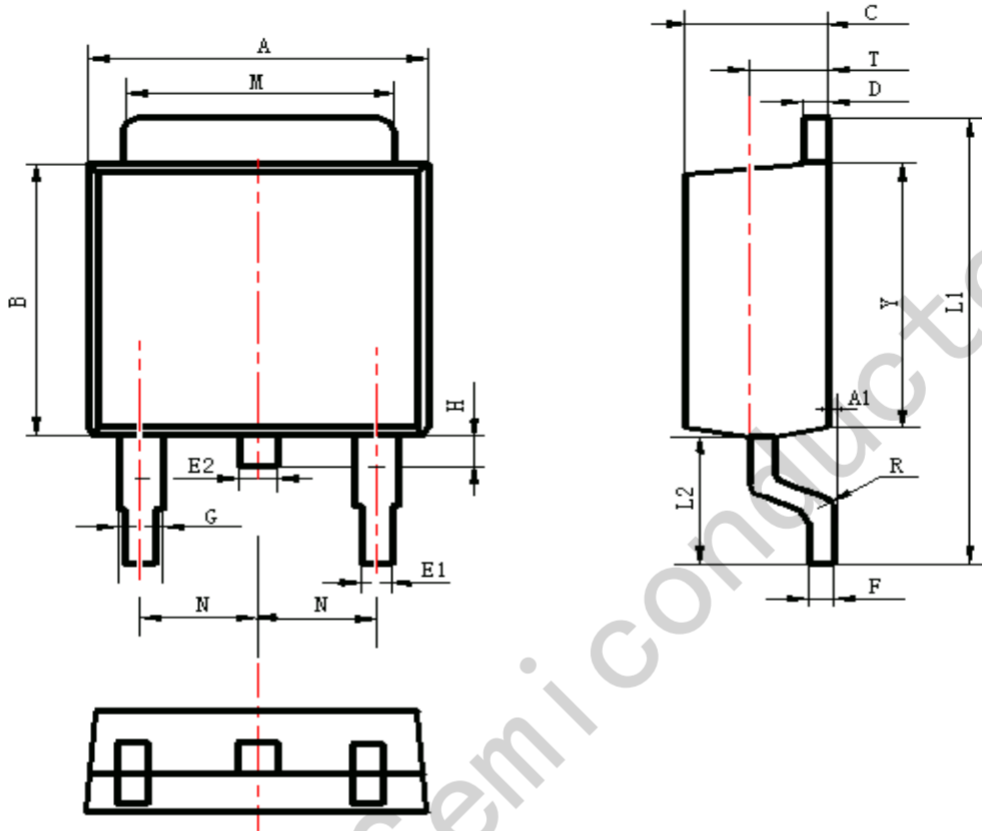


Figure 11 Normalized Maximum Transient Thermal Impedance

## Package Information

TO-252



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	6.30	6.90	0.248	0.272
A1	0.00	0.16	0.000	0.006
B	5.70	6.30	0.224	0.248
C	2.10	2.50	0.083	0.098
D	0.30	0.70	0.012	0.028
E1	0.60	0.90	0.024	0.035
E2	0.70	1.00	0.028	0.039
F	0.30	0.60	0.012	0.024
G	0.70	1.20	0.028	0.047
L1	9.60	10.50	0.378	0.413
L2	2.70	3.10	0.106	0.122
H	0.40	1.00	0.016	0.039
M	5.10	5.50	0.201	0.217
N	2.09	2.49	0.082	0.098
R	0.30		0.012	
T	1.40	1.60	0.055	0.063
Y	5.10	6.30	0.201	0.248