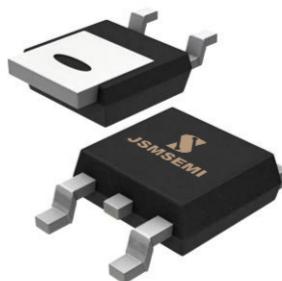


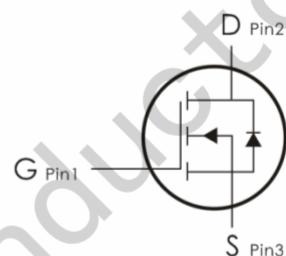
## Description:

This N-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)  $V_{DS}=30V, I_D=80A, R_{DS(ON)}<5.5\text{ m}\Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low  $R_{DS(ON)}$ .
- 5) Excellent package for good heat dissipation.



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

Symbol	Parameter	Ratings	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current- $T_C=25^\circ\text{C}$	80	A
	Continuous Drain Current- $T_C=100^\circ\text{C}$	46	
	Pulsed Drain Current <sup>1</sup>	280	
$E_{AS}$	Single Pulse Avalanche Energy <sup>2</sup>	56	mJ
$P_D$	Power Dissipation, $T_C=25^\circ\text{C}$	46	W
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

## Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{eJC}$	Thermal Resistance,Junction to Case	2.72	$^\circ\text{C}/\text{W}$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$\text{BV}_{\text{DSS}}$	Drain-Source Breakdown Voltage	$V_{\text{GS}}=0\text{V}, I_D=250 \mu\text{A}$	30	---	---	V
$I_{\text{DSS}}$	Zero Gate Voltage Drain Current	$V_{\text{GS}}=0\text{V}, V_{\text{DS}}=30\text{V}$	---	---	1	$\mu\text{A}$
$I_{\text{GSS}}$	Gate-Source Leakage Current	$V_{\text{GS}}=\pm 20\text{V}, V_{\text{DS}}=0\text{A}$	---	---	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{\text{GS}(\text{th})}$	GATE-Source Threshold Voltage	$V_{\text{GS}}=V_{\text{DS}}, I_D=250 \mu\text{A}$	1	1.5	2.5	V
$R_{\text{DS}(\text{ON})}$	Drain-Source On Resistance <sup>3</sup>	$V_{\text{GS}}=10\text{V}, I_D=30\text{A}$	---	4.2	5.5	$\text{m}\Omega$
		$V_{\text{GS}}=4.5\text{V}, I_D=20\text{A}$	---	7.5	12	
<b>Dynamic Characteristics</b>						
$C_{\text{iss}}$	Input Capacitance	$V_{\text{DS}}=15\text{V}, V_{\text{GS}}=0\text{V}, f=1\text{MHz}$	---	1614	---	$\text{pF}$
$C_{\text{oss}}$	Output Capacitance		---	245	---	
$C_{\text{rss}}$	Reverse Transfer Capacitance		---	215	---	
<b>Switching Characteristics</b>						
$t_{\text{d}(\text{on})}$	Turn-On Delay Time	$V_{\text{DD}}=15\text{V}, I_D=30\text{A}, V_{\text{GS}}=10\text{V}, R_{\text{GEN}}=3\Omega$	---	7.5	---	ns
$t_r$	Rise Time		---	14.5	---	ns
$t_{\text{d}(\text{off})}$	Turn-Off Delay Time		---	35.2	---	ns
$t_f$	Fall Time		---	9.6	---	ns
$Q_g$	Total Gate Charge	$V_{\text{GS}}=10\text{V}, V_{\text{DS}}=15\text{V}, I_D=30\text{A}$	---	33.7	---	nC
$Q_{\text{gs}}$	Gate-Source Charge		---	8.5	---	nC
$Q_{\text{gd}}$	Gate-Drain "Miller" Charge		---	7.5	---	nC
<b>Drain-Source Diode Characteristics</b>						
$V_{\text{SD}}$	Source-Drain Diode Forward Voltage	$V_{\text{GS}}=0\text{V}, I_S=30\text{A}$	---	---	1.2	V
$I_s$	Continuous Source Current	---	---	---	80	A
$I_{\text{sm}}$	Pulsed Source Current		---	--	280	A

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

 2. EAS condition:  $T_J=25^\circ\text{C}, V_{\text{DD}}=15\text{V}, V_{\text{G}}=10\text{V}, R_G=25 \Omega, L=0.5\text{mH}, I_{\text{AS}}=15\text{A}$ 

 3. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 0.5\%$

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

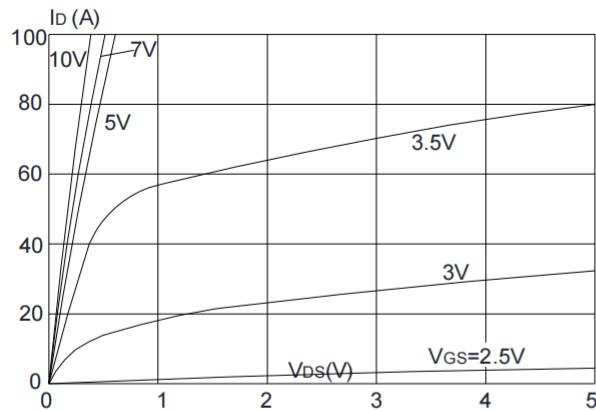


Figure 1: Output Characteristics

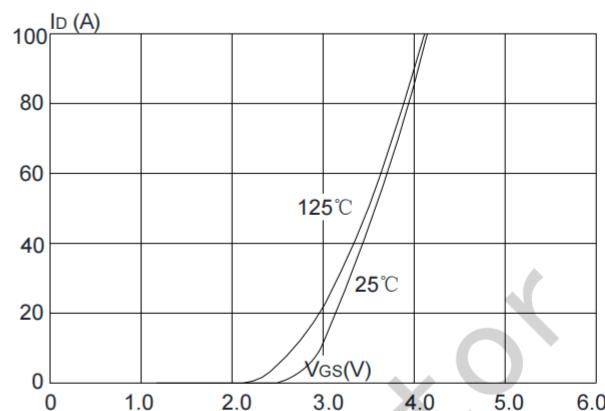


Figure 2: Typical Transfer Characteristics

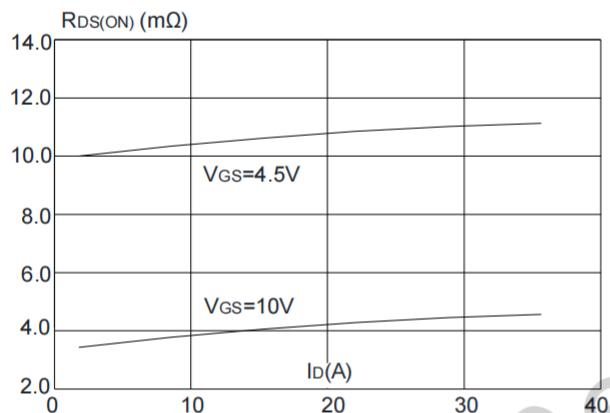


Figure 3: On-resistance vs. Drain Current

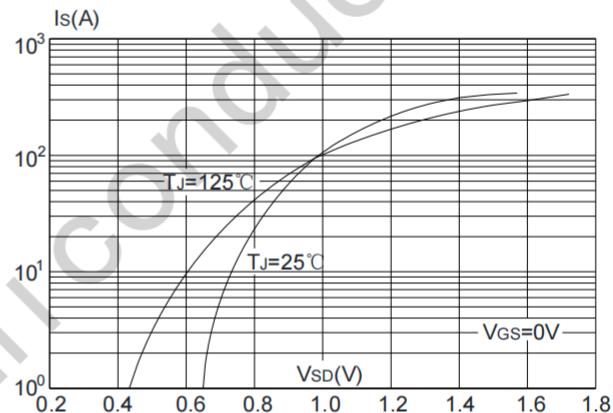


Figure 4: Body Diode Characteristics

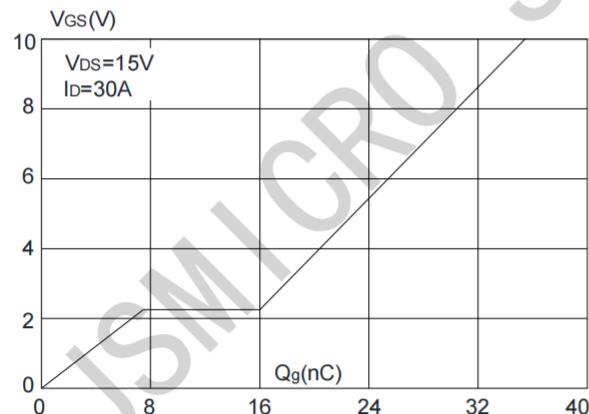


Figure 5: Gate Charge Characteristics

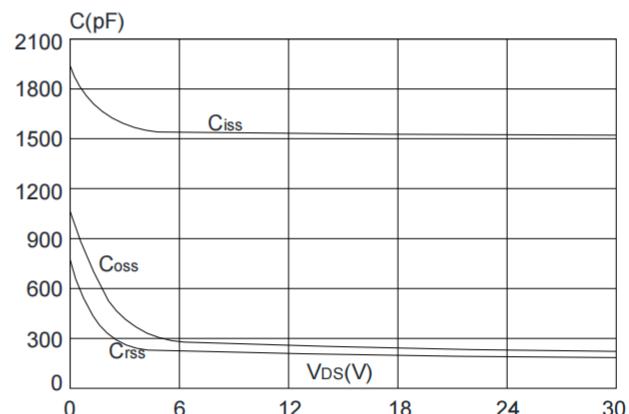
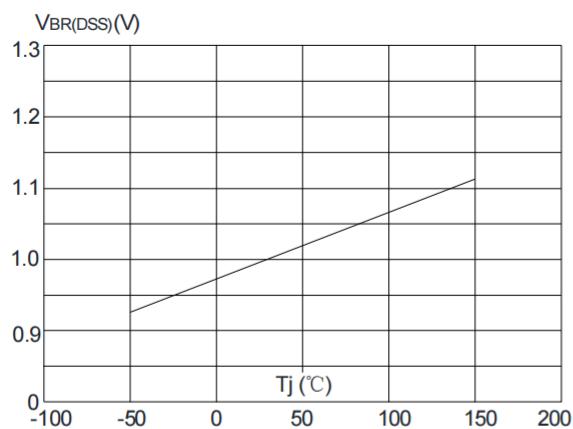
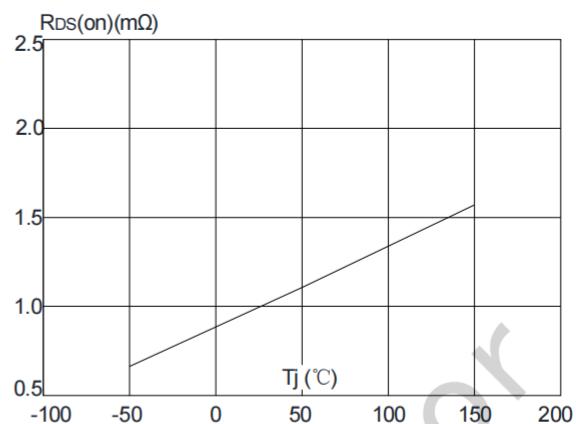


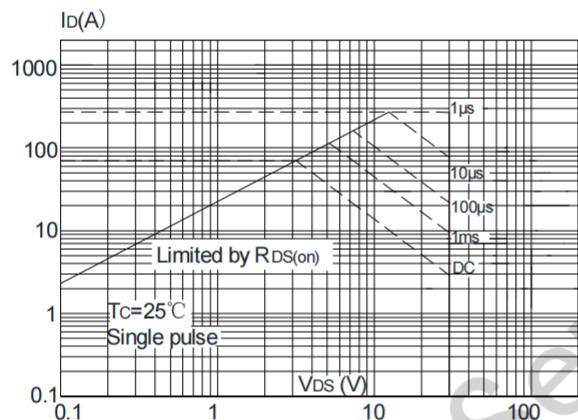
Figure 6: Capacitance Characteristics



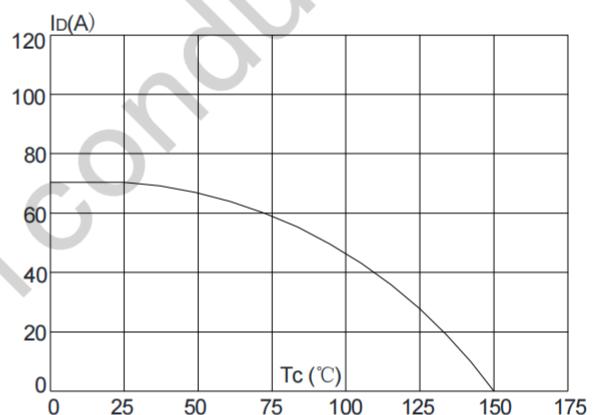
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



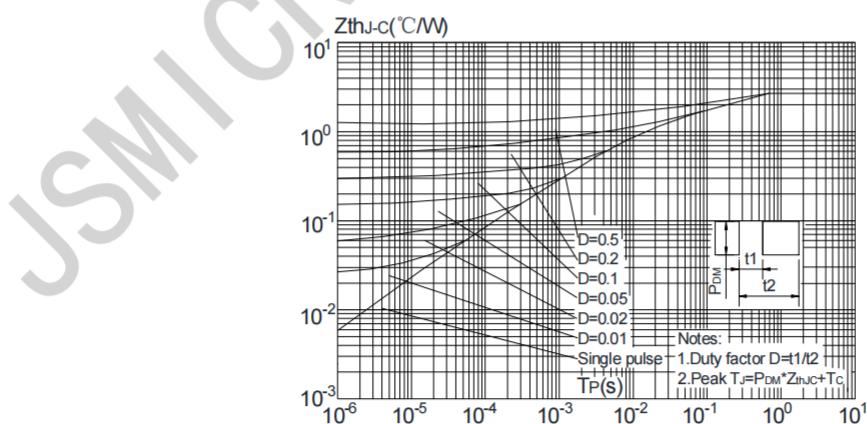
**Figure 8:** Normalized on Resistance vs. Junction Temperature



**Figure 9:** Maximum Safe Operating Area



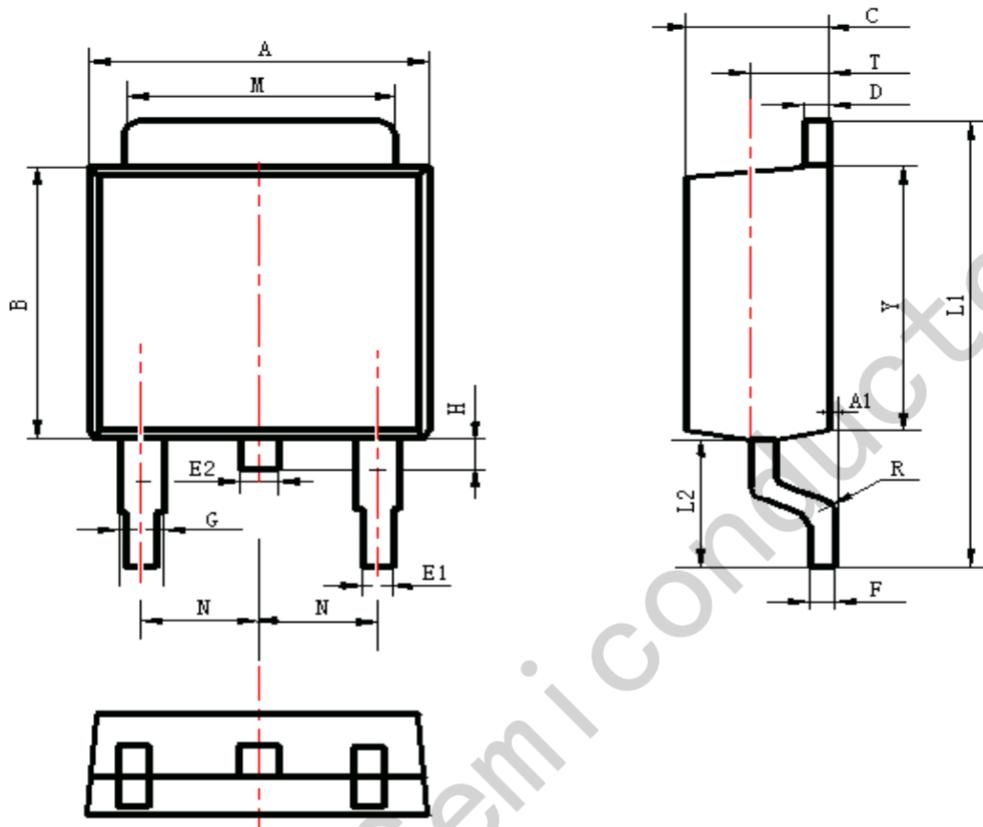
**Figure 10:** Maximum Continuous Drain Current vs. Case Temperature



**Figure 11:** Maximum Effective Transient Thermal Impedance, Junction-to-Case

## 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