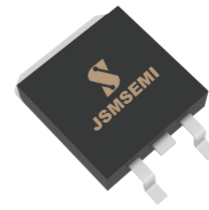


## Description:

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

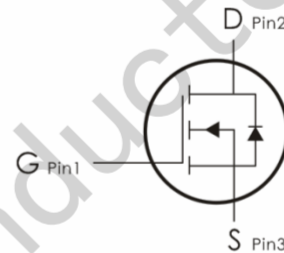
It can be used in a wide variety of applications.



TO-263

## Features:

- 1)  $V_{DS}=100V, I_D=60A, R_{DS(ON)} < 17.5 \text{ m}\Omega @ V_{GS}=10V$
- 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: ( $T_C=25^\circ\text{C}$ 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- $T_C=25^\circ\text{C}$	60	A
	Continuous Drain Current- $T_C=100^\circ\text{C}$	40	
$I_{DM}$	Pulsed Drain Current	160	
$E_{AS}$	Single Pulse Avalanche Energy <sup>5</sup>	580	mJ
$P_D$	Power Dissipation	160	W
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

## Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case <sup>2</sup>	0.94	$^\circ\text{C}/\text{W}$

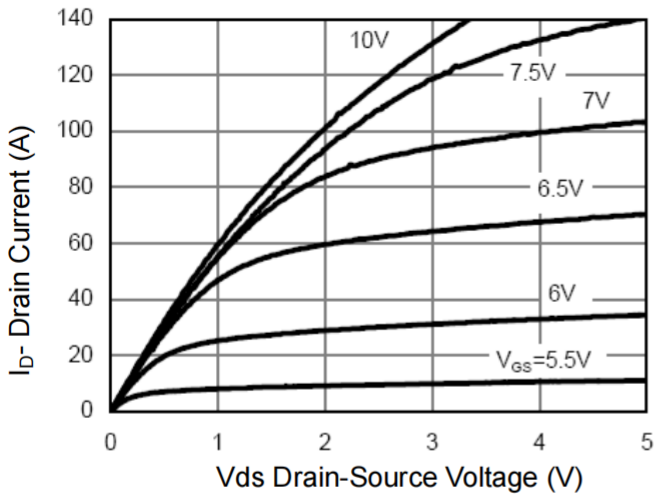
**Electrical Characteristics:** ( $T_c=25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	100	110	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=100V$	---	---	1	$\mu\text{A}$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	GATE-Source Threshold Voltage <sup>3</sup>	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	2	3	4	V
$R_{DS(ON)}$	Drain-Source On Resistance <sup>3</sup>	$V_{GS}=10V, I_D=28A$	---	14.5	17.5	$\text{m}\Omega$
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance <sup>4</sup>	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	3968	---	pF
$C_{oss}$	Output Capacitance <sup>4</sup>		---	182.4	---	
$C_{rss}$	Reverse Transfer Capacitance <sup>4</sup>		---	160	---	
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-On Delay Time <sup>4</sup>	$V_{DD}=30V, I_D=2A,$ $R_{GEN}=2.5\ \Omega, V_{GS}=10V$	---	16	---	ns
$t_r$	Rise Time <sup>4</sup>		---	12	---	ns
$t_{d(off)}$	Turn-Off Delay Time <sup>4</sup>		---	54	---	ns
$t_f$	Fall Time <sup>4</sup>		---	15	---	ns
$Q_g$	Total Gate Charge <sup>4</sup>		$V_{GS}=10V, V_{DS}=30V,$ $I_D=30A$	---	146	---
$Q_{gs}$	Gate-Source Charge <sup>4</sup>	---		29	---	nC
$Q_{gd}$	Gate-Drain "Miller" Charge <sup>4</sup>	---		57	---	nC
<b>Drain-Source Diode Characteristics</b>						
$V_{SD}$	Source-Drain Diode Forward Voltage <sup>3</sup>	$V_{GS}=0V, I_S=28A$	---	0.85	1.2	V
$T_{rr}$	Reverse Recovery Time	$T_j=25^\circ\text{C}, I_{sd}=28A,$ $V_{GS}=0V$	---	35	---	NS
$Q_{rr}$	Reverse Recovery Charge	$di/dt=500A/\mu\text{s}$	---	58	---	NC
$I_S$	Continuous Drain Current <sup>2</sup>	$V_D=V_G=0V$	---	60	---	A
$I_{SM}$	Pulsed Drain Current		---	160	---	A

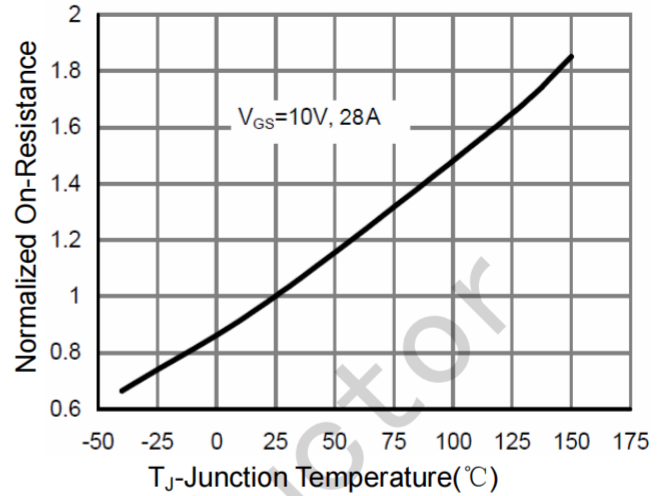
**Notes:**

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board,  $t \leq 10\ \text{sec}$ .
3. Pulse Test: Pulse Width  $\leq 300\ \mu\text{s}$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production
5. EAS condition:  $T_j=25^\circ\text{C}, V_{DD}=50V, V_G=10V, R_g=25\ \Omega, L=1\text{mH}, I_{AS}=35A$

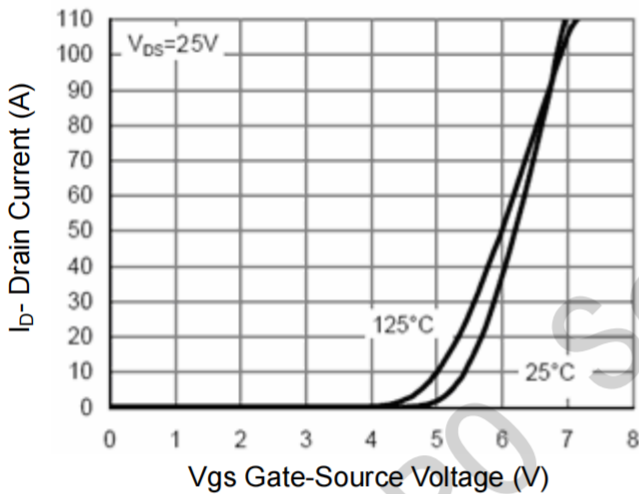
Typical Characteristics: ( $T_C=25^{\circ}\text{C}$  unless otherwise noted)



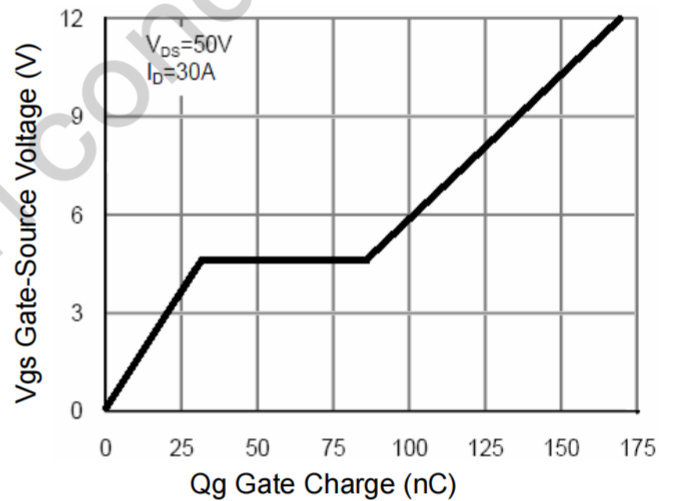
**Figure 1 Output Characteristics**



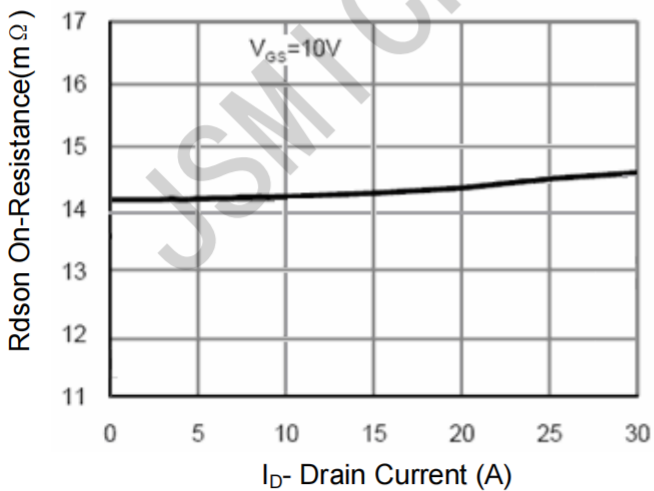
**Figure 4 Rds(on)-Junction Temperature**



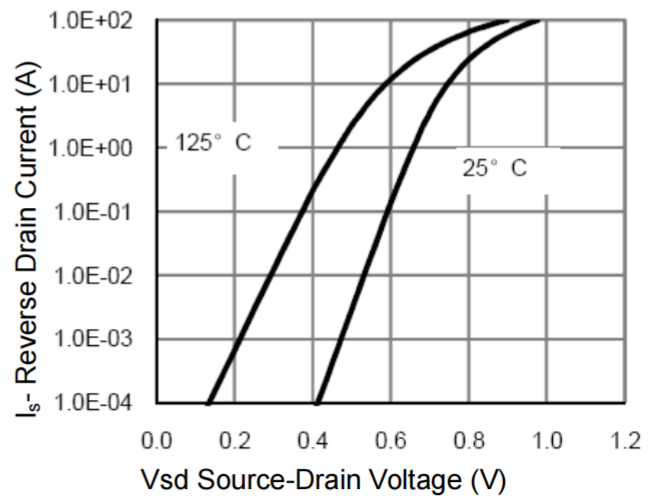
**Figure 2 Transfer Characteristics**



**Figure 5 Gate Charge**



**Figure 3 Rds(on)- Drain Current**



**Figure 6 Source- Drain Diode Forward**

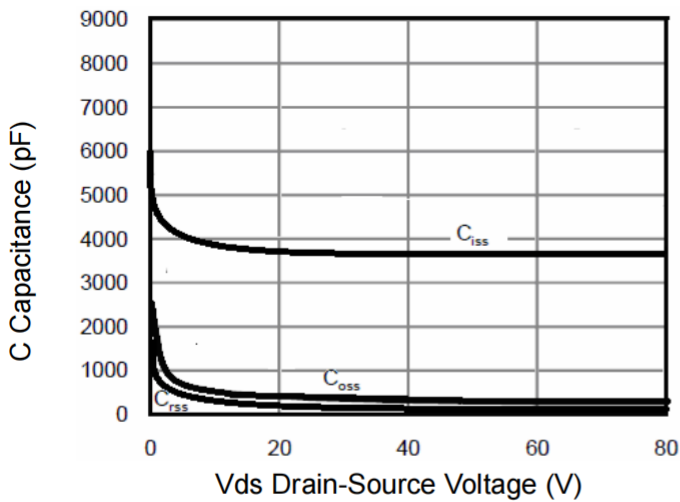


Figure 7 Capacitance vs Vds

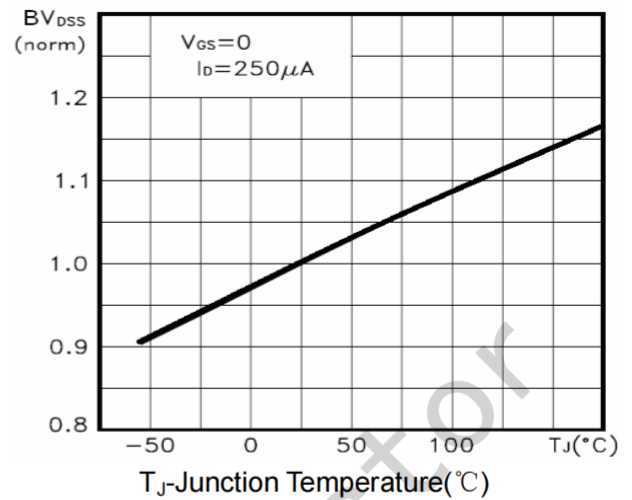


Figure 9  $BV_{DSS}$  vs Junction Temperature

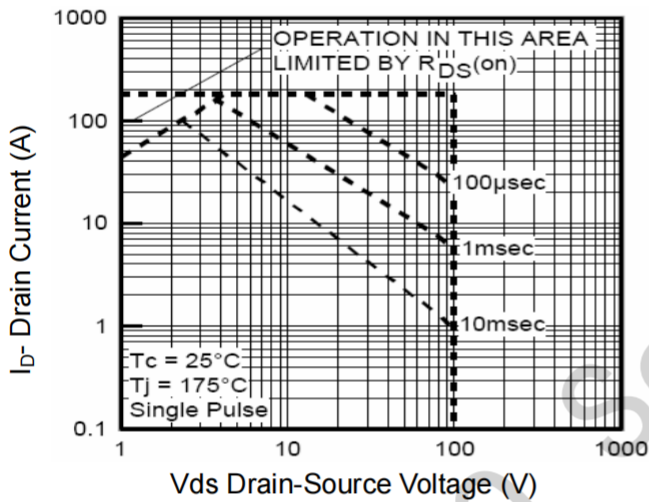


Figure 8 Safe Operation Area

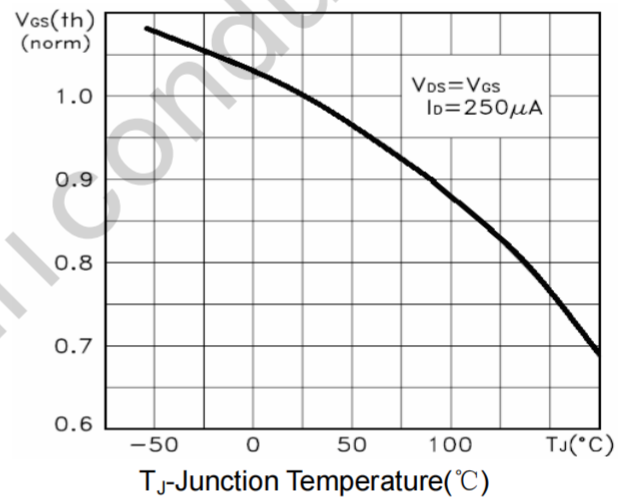


Figure 10  $V_{GS(th)}$  vs Junction Temperature

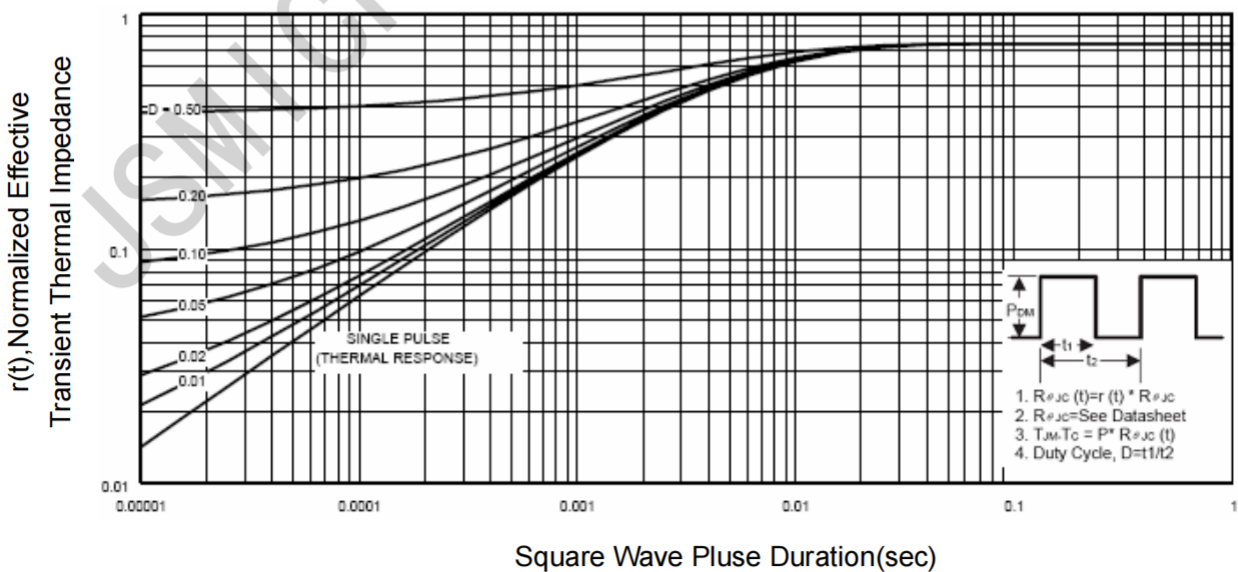
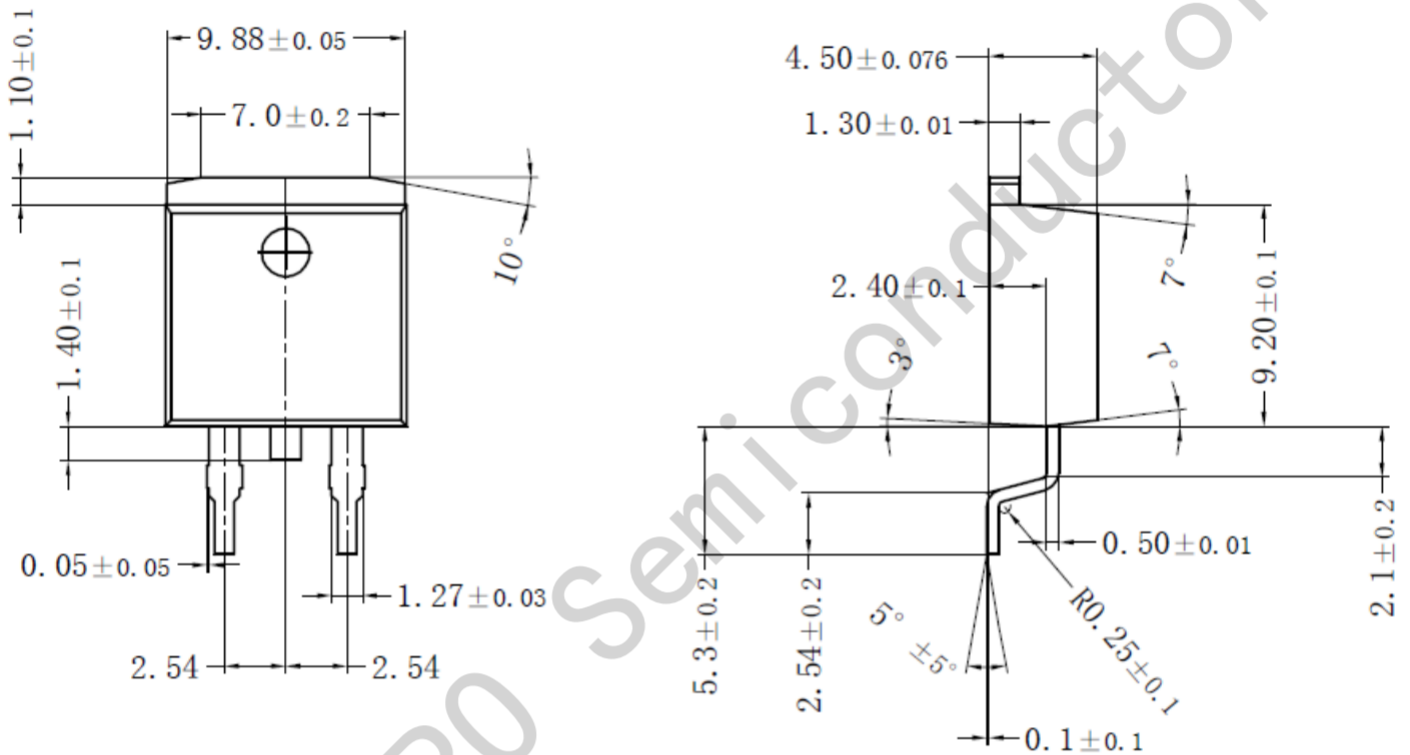


Figure 11 Normalized Maximum Transient Thermal Impedance

**Package Information**

TO-263

Unit: mm



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