

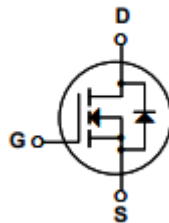
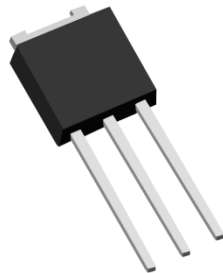
## Description

This N-channel MOSFET s use advanced trench technology and design to provide excellent RDS(on) with low gate charge. It can be used in a wide variety of applications.

## Features

BVDSS	RDSON	ID
60V	0.02Ω	50A

- 1) Low gate charge.
- 2) Green device available.
- 3) Advanced high cell density trench technology for ultra RDS(ON)
- 4) Excellent package for good heat dissipation.



TO-251

## Absolute Maximum Ratings $T_c=25^{\circ}\text{C}$ , unless otherwise noted

Symbol	Parameter	Ratings	Units
VDS	Drain-Source Voltage	60	V
VGS	Gate-Source Voltage	±20	V
ID	Continuous Drain Current-1	50	A
	Continuous Drain Current-T=100°C	10.6	
	Pulsed Drain Current <sup>2</sup>	67.2	
EAS	Single Pulse Avalanche Energy <sup>3</sup>	155	mJ
PD	Power Dissipation <sup>4</sup>	38	W
TJ, TSTG	Operating and Storage Junction Temperature Range	-55 to +150	°C

## Thermal Characteristics

**KERSEMI ELECTRONIC CO.,LTD.**
**60V N-channel MOSFET**

Symbol	Parameter	Ratings	Units
$R_{\theta JC}$	Thermal Resistance ,Junction to Case1	3.28	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient1	110	

## Package Marking and Ordering Information

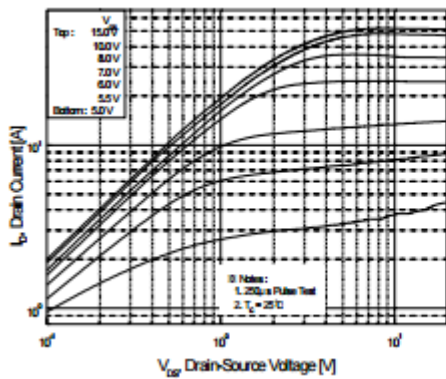
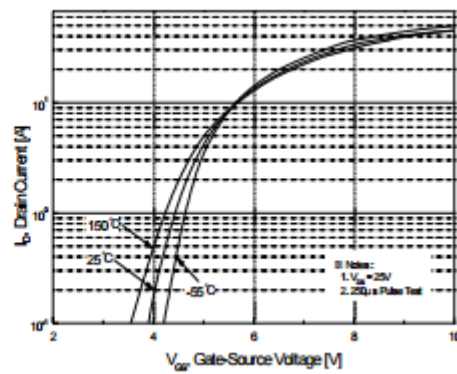
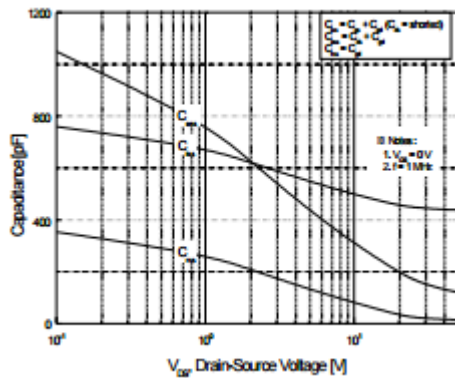
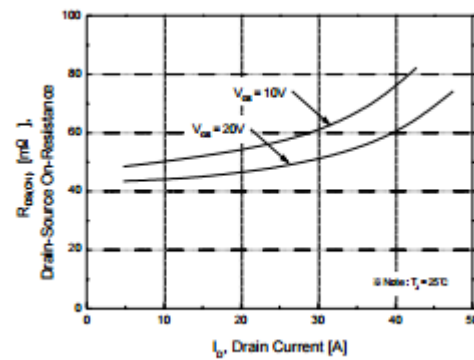
Part NO.	Marking	Package
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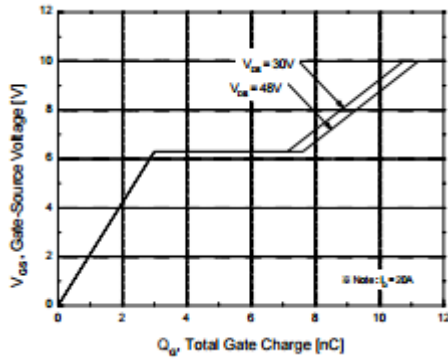
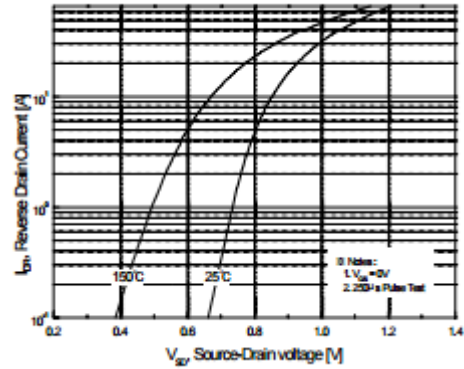
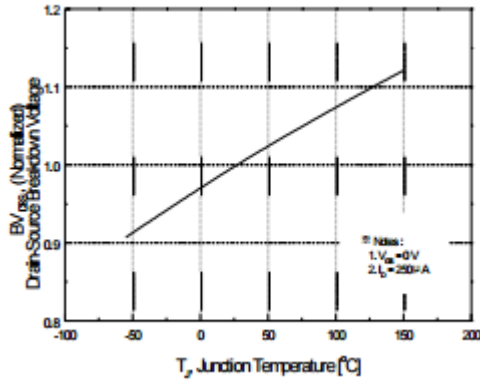
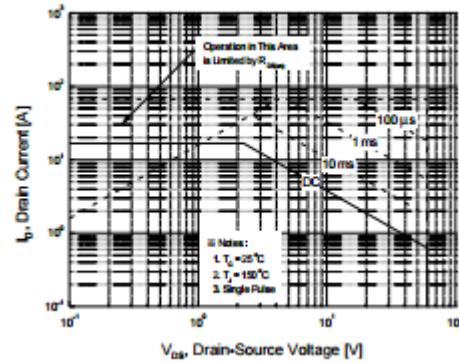
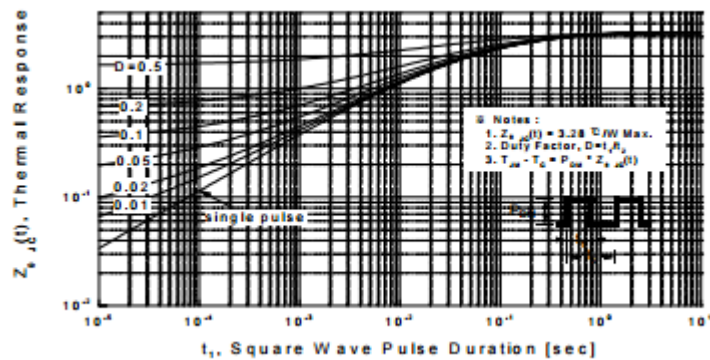
## Electrical Characteristics $T_c=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	60	—	—	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=32V$	—	—	1	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{DS}=\pm 20V, V_{GS}=0A$	—	—	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{DS}=V_{DS}, I_D=250\mu A$	2.0	—	4.0	V
$R_{DS(on)}$	Drain-Source On Resistance <sup>2</sup>	$V_{DS}=10V, I_D=6A$	—	0.050	0.02	$\Omega$
		$V_{DS}=2.5V, I_D=5A$	—	—	—	---
$G_{FS}$	Forward Transconductance	$V_{DS}=5V, I_D=12A$	—	10	—	S
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V,$ $f=1MHz$	—	450	590	pF
$C_{oss}$	Output Capacitance		—	170	220	
$C_{rss}$	Reverse Transfer Capacitance		—	25	35	
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=20V,$ $V_{GS}=10V, R_{GEN}=3.3\Omega$	—	5	20	ns
$t_r$	Rise Time		—	45	100	ns
$t_{d(off)}$	Turn-Off Delay Time		—	20	50	ns
$t_f$	Fall Time		—	25	60	ns
$Q_g$	Total Gate Charge	$V_{GS}=4.5V, V_{DS}=20V,$ $I_D=6A$	—	11.5	15	nC
$Q_{gs}$	Gate-Source Charge		—	3	—	nC
$Q_{gd}$	Gate-Drain "Miller" Charge		—	4.5	—	nC
<b>Drain-Source Diode Characteristics</b>						
$V_{SD}$	Source-Drain Diode Forward Voltage <sup>2</sup>	$V_{GS}=0V, I_S=1A$	—	—	1.5	V
$t_{rr}$	Reverse Recovery Time	$I_F=7A, di/dt=100A/\mu S$	—	43	—	ns
$Q_{rr}$	Reverse Recovery Charge		—	50	—	nC

**Notes:**

1. The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board 2OZ copper.
2. The data tested by pulse width≤300us,duty cycle≤2%
3. The EAS data shows Max.rating.The test condition is  $V_{DD}=25V, V_{GS}=10V, L=0.1mH, i_{AS}=17.8A$
4. The power dissipation is limited by 150°C junction temperature.

**Typical Characteristics  $T_J=25^{\circ}C$  unless otherwise noted**

**Figure 1. On-Region Characteristics**

**Figure 2. Transfer Characteristics**

**Figure 3. Capacitance Characteristics**

**Figure 4. On-Resistance Variation vs. Drain Current and Gate Voltage**


**Figure 5. Gate Charge Characteristics**

**Figure 6. Body Diode Forward Voltage Variation vs. Source Current and Temperature**

**Figure 7. Breakdown Voltage Variation vs. Temperature**

**Figure 8. Maximum Safe Operating Area**

**Figure 9. Transient Thermal Response Curve**