

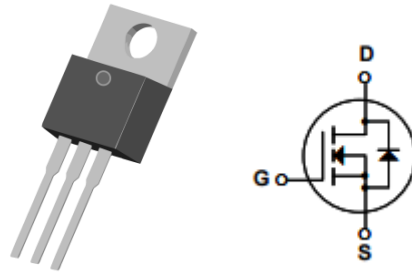
Description

This P-channel MOSFETS 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	RDS(ON)	ID
-55V	0.175Ω	-12A

- 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-220

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

Symbol	Parameter	Ratings	Units
VDS	Drain-Source Voltage	-55	V
VGS	Gate-Source Voltage	±20	V
ID	Continuous Drain Current-1	-12	A
	Continuous Drain Current-T=100°C	-8.5	
	Pulsed Drain Current ²	-48	
EAS	Single Pulse Avalanche Energy ³	96	mJ
PD	Power Dissipation ⁴	-7.2	W
TJ, TSTG	Operating and Storage Junction Temperature Range	-55 to +175	°C

Thermal Characteristics

KERSEMI ELECTRONIC CO.,LTD.
-55V P-channel MOSFET

Symbol	Parameter	Ratings	Units
$R_{\theta JC}$	Thermal Resistance ,Junction to Case1	3.3	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient1	62	

Package Marking and Ordering Information

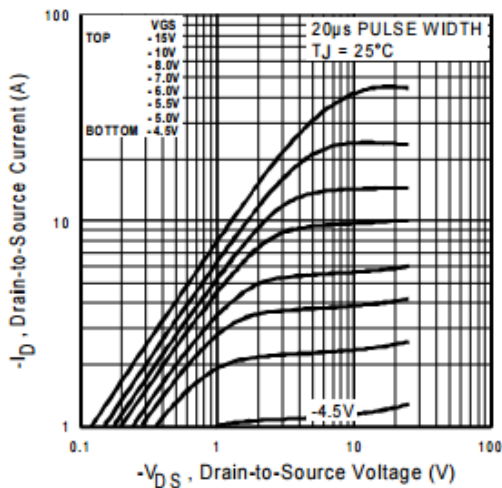
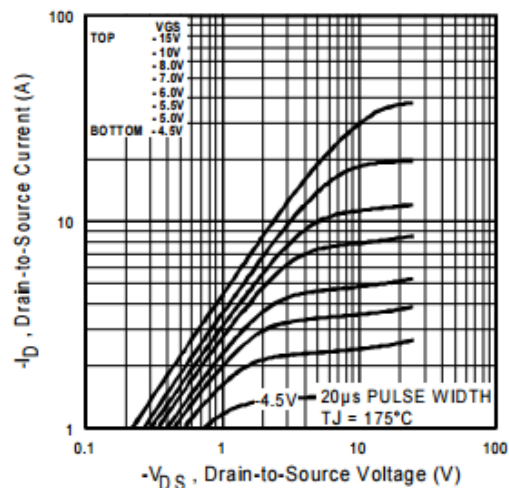
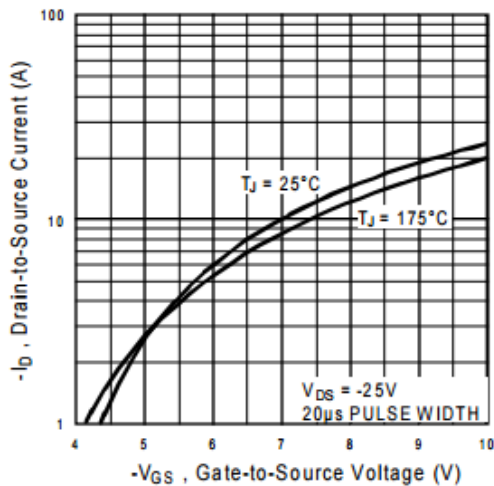
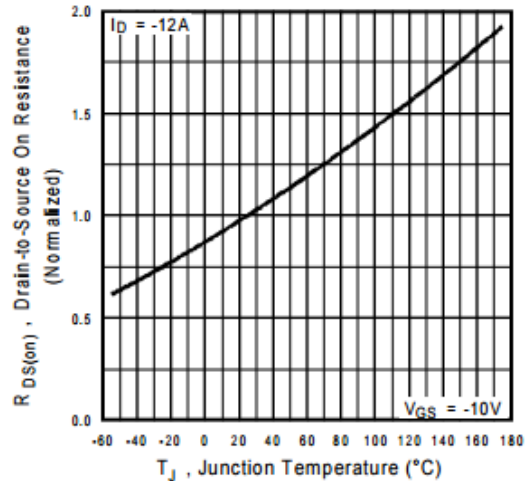
Part NO.	Marking	Package
KSM9Z24	KSM9Z24	TO-220

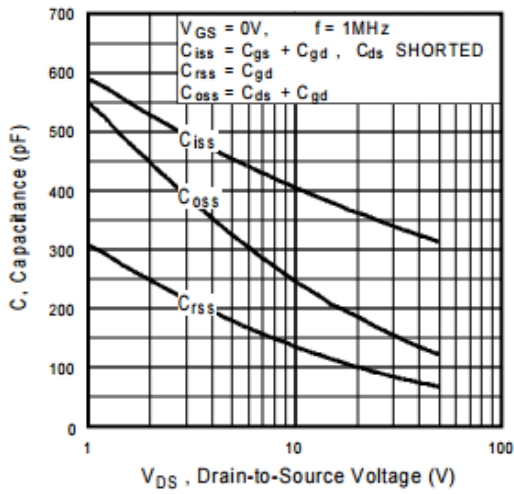
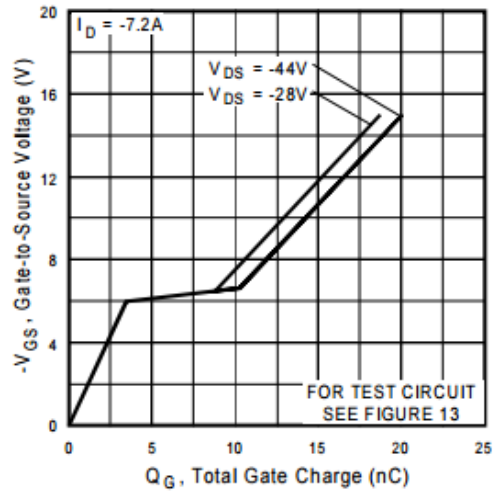
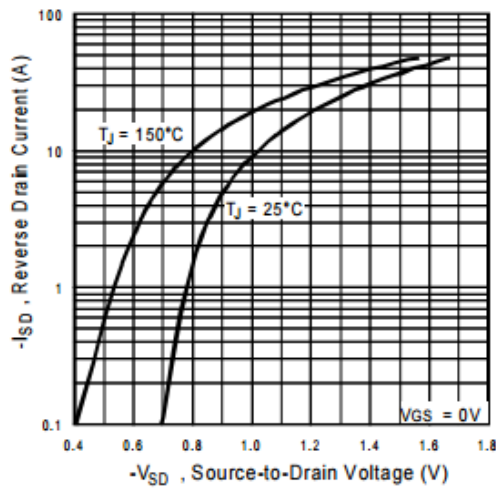
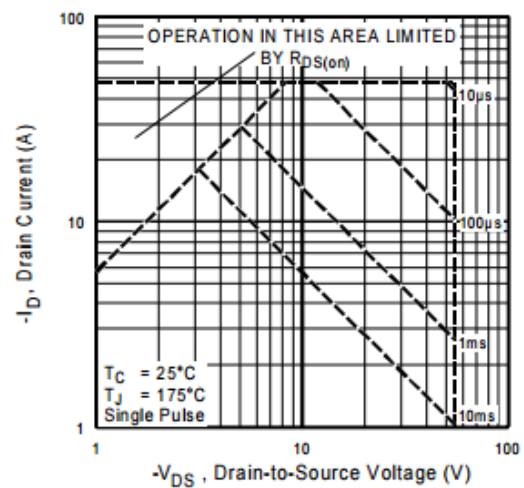
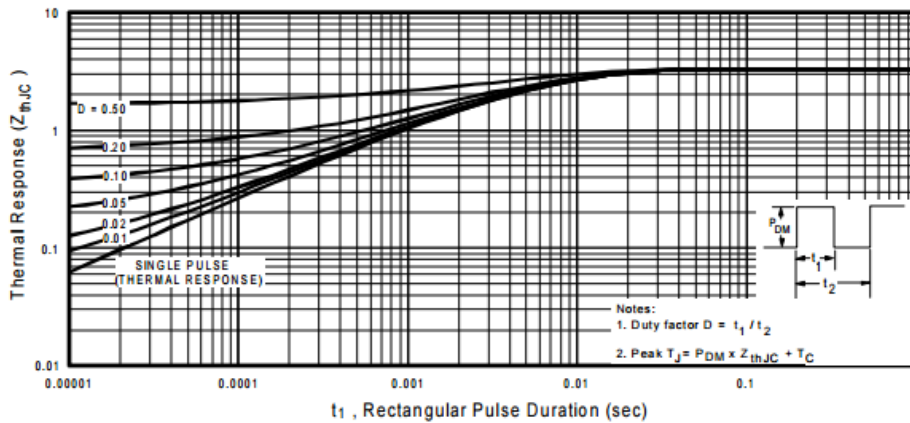
Electrical Characteristics $T_c=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	-55	—	—	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=0V, V_{GS}=32V$	—	—	-25	μA
I_{GSS}	Gate-Source Leakage Current	$V_{DS}=\pm 20V, V_{GS}=0A$	—	—	± 100	nA
On Characteristics						
$V_{GS(th)}$	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 ²	$V_{DS}=10V, I_D=6A$	—	—	0.175	Ω
		$V_{DS}=2.5V, I_D=5A$	—	—	—	
G_{FS}	Forward Transconductance	$V_{DS}=5V, I_D=12A$	2.5	—	—	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V,$ $f=1MHz$	—	350	—	pF
C_{oss}	Output Capacitance		—	170	—	
C_{rss}	Reverse Transfer Capacitance		—	92	—	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=20V,$	—	13	—	ns
t_r	Rise Time		—	55	—	
$t_{d(off)}$	Turn-Off Delay Time	$V_{GS}=10V, R_{GEN}=3.3\Omega$	—	23	—	ns
t_f	Fall Time		—	37	—	
Q_g	Total Gate Charge	$V_{GS}=4.5V, V_{DS}=20V,$ $I_D=6A$	—	—	19	nC
Q_{gs}	Gate-Source Charge		—	—	5.1	
Q_{gd}	Gate-Drain “Miller” Charge		—	—	10	
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage ²	$V_{GS}=0V, I_S=1A$	—	-1.6	—	V
t_{rr}	Reverse Recovery Time	$I_F=7A, di/dt=100A/\mu S$	—	47	71	ns
Q_{rr}	Reverse Recovery Charge		—	84	130	

KERSEMI ELECTRONIC CO.,LTD.
-55V P-channel MOSFET
Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board 2OZ copper.
2. The data tested by pulse width \leq 300us,duty cycle \leq 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 $^{\circ}C$ junction temperature.

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

Fig. 1 Typical Output Characteristics,
 $T_C = 25^{\circ}$

Fig. 2 Typical Transfer Characteristics

Fig. 3 Typical Output Characteristics,
 $T_C = 150^{\circ}C$

Fig. 4 - Normalized On-Resistance vs.
Temperature


Fig. 5 - Typical Capacitance vs. Drain-to-Source Voltage

Fig. 6 - Typical Source-Drain Diode Forward Voltage

Fig. 7 - Typical Gate Charge vs. Gate-to-Source Voltage

Fig. 8 - Maximum Safe Operating Area

Fig. 9 - Maximum Effective Transient Thermal Impedance, Junction-to-Case