

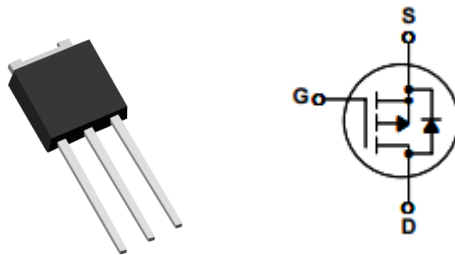
Description

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
-60V	0.5Ω	-5.1A

- 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	-5.1	A
	Continuous Drain Current-T=100°C	-3.2	
	Pulsed Drain Current ²	-20	
EAS	Single Pulse Avalanche Energy ³	140	mJ
PD	Power Dissipation ⁴	25	W
TJ, TSTG	Operating and Storage Junction Temperature Range	-55 to +150	°C

Thermal Characteristics

Symbol	Parameter	Ratings	Units
RθJC	Thermal Resistance ,Junction to Case ¹	5.0	°C/W
RθJA	Thermal Resistance, Junction to Ambient ¹	110	

Package Marking and Ordering Information

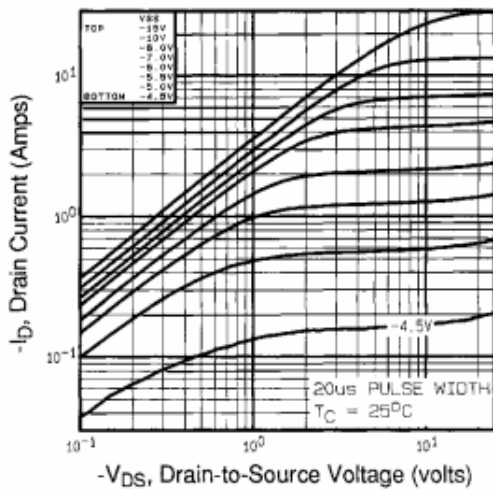
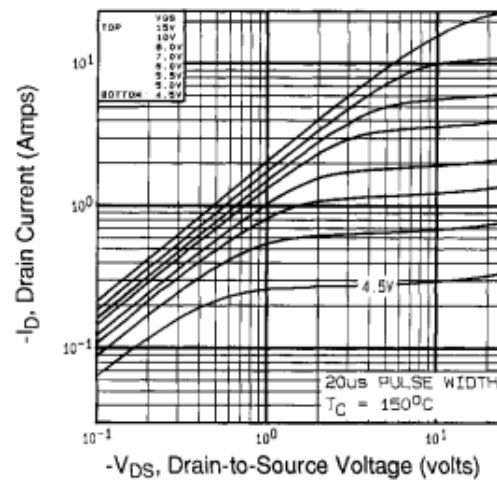
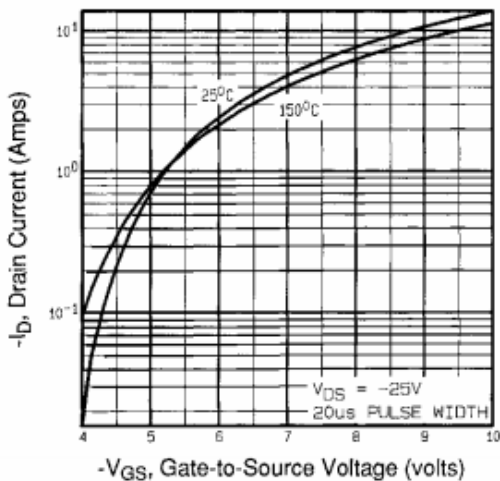
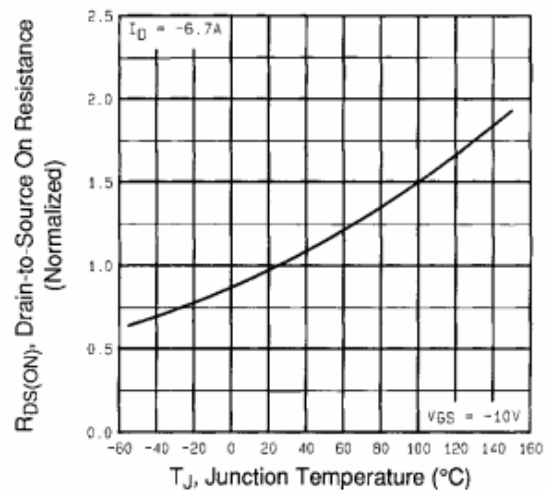
Part NO.	Marking	Package
KSMU9014N	KSMU9014N	TO-251

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	$V_{DS}=0V, I_D=250\mu A$	-80	—	—	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=0V, V_{GS}=32V$	—	—	-100	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	$V_{DS}=10V, I_D=6A$	—	—	0.5	Ω
		$V_{DS}=2.5V, I_D=5A$	—	—	—	
G_{FS}	Forward Transconductance	$V_{DS}=5V, I_D=12A$	1.4	—	—	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V,$ $f=1MHz$	—	270	—	pF
C_{oss}	Output Capacitance		—	170	—	
C_{rss}	Reverse Transfer Capacitance		—	31	—	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=20V,$ $V_{GS}=10V, R_{GEN}=3.3\Omega$	—	11	—	ns
t_r	Rise Time		—	63	—	ns
$t_{d(off)}$	Turn-Off Delay Time		—	9.6	—	ns
t_f	Fall Time		—	31	—	ns
Q_g	Total Gate Charge	$V_{GS}=4.5V, V_{DS}=20V,$ $I_D=6A$	—	—	12	nC
Q_{gs}	Gate-Source Charge		—	—	3.8	nC
Q_{gd}	Gate-Drain "Miller" Charge		—	—	5.1	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage ²	$V_{GS}=0V, I_S=1A$	—	—	-5.5	V
t_{rr}	Reverse Recovery Time	$I_F=7A, di/dt=100A/\mu S$	—	80	160	ns
Q_{rr}	Reverse Recovery Charge		—	0.0	0.19	nC

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board 2OZ copper.
2. The data tested by pulse width ≤ 300us, duty cycles ≤ 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

Fig 1. Typical Output Characteristics

Fig 2. Typical Output Characteristics

Fig 3. Typical Transfer Characteristics

Fig 4. Normalized On-Resistance Vs. Temperature

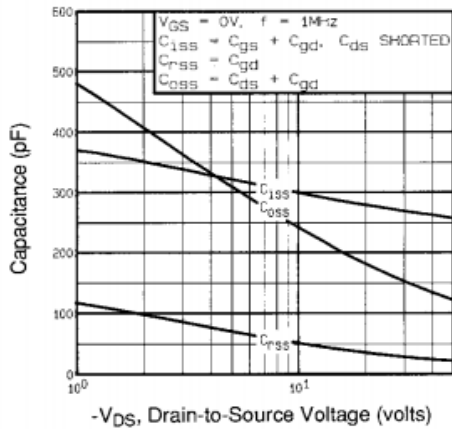


Fig 5. Typical Capacitance vs. Drain-to-Source Voltage

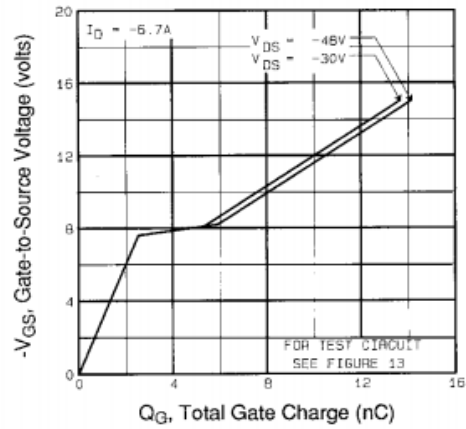


Fig 6. Typical Gate Charge vs. Drain-to-Source Voltage

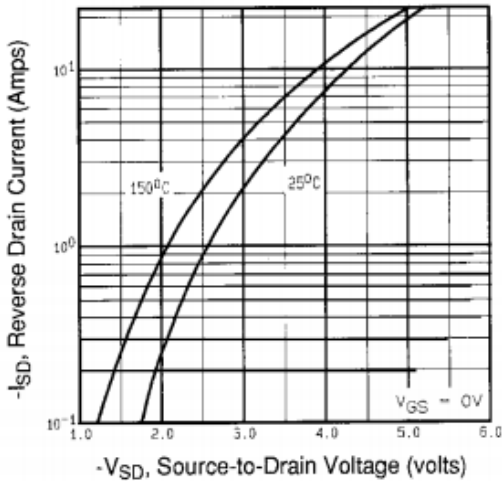


Fig 7. Typical Source-Drain Diode Forward Voltage

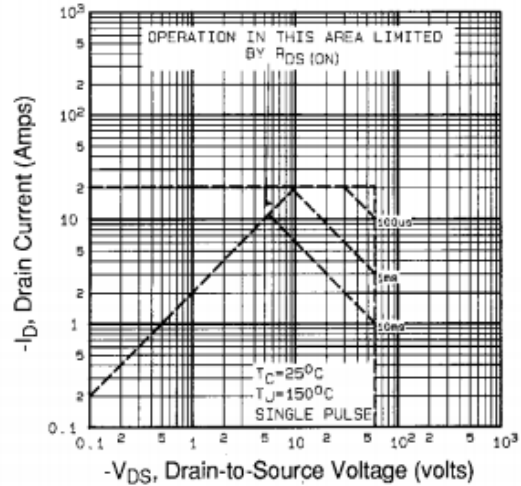


Fig 8. Maximum Safe Operating Area

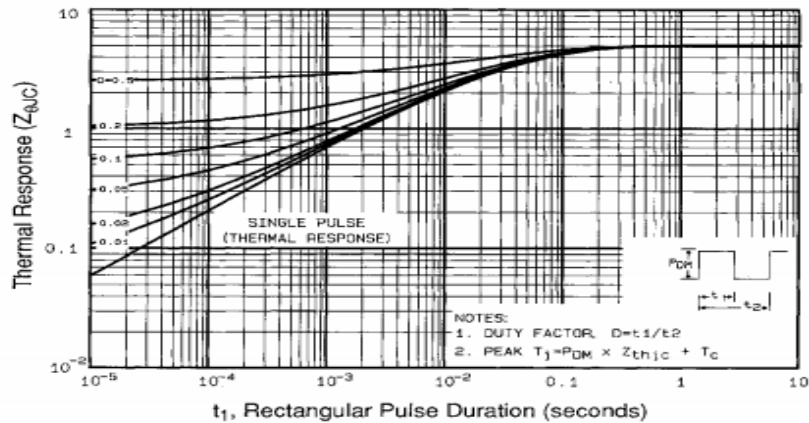


Fig 9. Maximum Effective Transient Thermal Impedance, Junction-to-Case