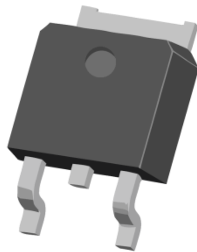
Description

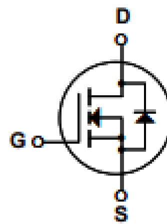
This N-channel MOSFETS use advanced trench technology and design to provide excellent RDS(on) with low gate charge. It can be used in a wide variety of applications.

Features

BVDSS	RDSON	ID
600V	1.2Ω	7A

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





TO-252

Absolute Maximum Ratings Tc=25℃,unless otherwise noted

Symbol	Parameter	Ratings	Units
VDS	Drain-Source Voltage	600	V
VGS	Gate-Source Voltage	±20	V
ID	Continuous Drain Current-1	7	A
	Continuous Drain Current-T=100℃	2.4	
	Pulsed Drain Current2	16	
EAS	Single Pulse Avalanche Energy3	300	mJ
PD	Power Dissipation4	80	W
TJ, TSTG	Operating and Storage Junction Temperature Range	-55 to +150	℃

Thermal Characteristics

Symbol	Parameter	Ratings	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case1	1.58	℃/W
$R_{\theta JA}$	Thermal Resistance ,Junction to Ambient1	110	

Package Marking and Ordering Information

Part NO.	Marking	Package
KSMD7N60	KSMD7N60	TO-252

Electrical Characteristics T_C=25℃ unless otherwise noted

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{DS}=0V,I_D=250μA	600	—	—	v
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=0V, V_{DS}=32V	—	—	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{DS}=±20V, V_{DS}=0A	—	—	±100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{DS}=VDS, I_D=250μA	2.0	—	4.0	V
$R_{DS(ON)}$	Drain-Source On Resistance[2]	V_{DS}=10V,I_D=6A	—	1.7	1.2	Ω
		V_{DS}=2.5V,I_D=5A	—	—	—	
G_{FS}	Forward Transconductance	V_{DS}=5V,I_D=12A	—	4.8	—	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V, f=1MHz	—	620	810	pF
C_{oss}	Output Capacitance		—	65	85	
C_{rss}	Reverse Transfer Capacitance		—	7	10	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=20V, V_{GS}=10V,R_{GEN}=3.3Ω	—	15	40	ns
t_r	Rise Time		—	45	100	ns
$t_{d(off)}$	Turn-Off Delay Time		—	45	100	ns
t_f	Fall Time		—	45	100	ns
Q_g	Total Gate Charge	V_{GS}=4.5V, V_{DS}=20V, I_D=6A	—	16	20	nC
Q_{gs}	Gate-Source Charge		—	3.5	—	nC
Q_{gd}	Gate-Drain “Miller” Charge		—	6.5	—	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode ForwardVoltage[2]	V_{GS}=0V,I_S =1A	—	—	1.4	V
t_{rr}	Reverse Recovery Time	I_F=7A,di/dt=100A/μS	—	310	—	ns
Q_{rr}	Reverse Recovery Charge		—	2.1	—	nC

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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 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℃ junction temperature.

Typical Characteristics T_J=25℃ unless otherwise noted

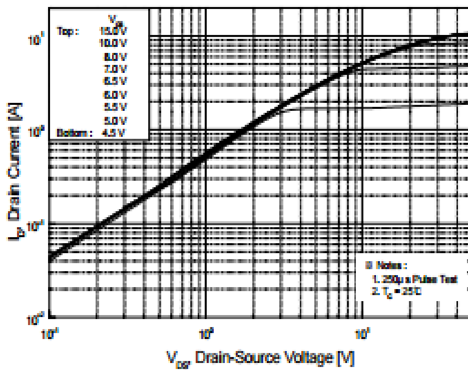

Figure 1. On-Region Characteristics

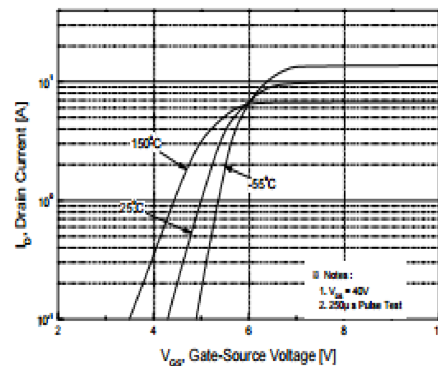

Figure 2. Transfer Characteristics

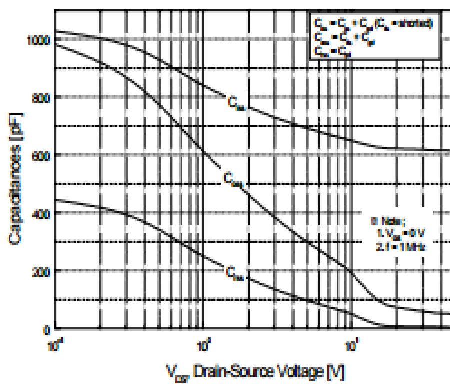

Figure 3. Capacitance Characteristics

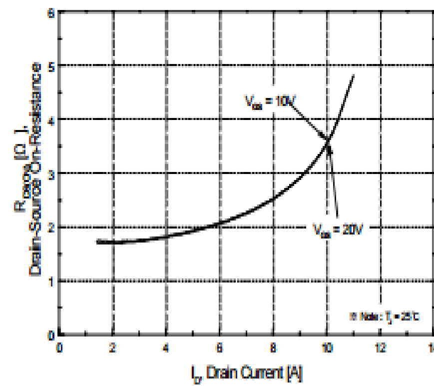

Figure 4. On-Resistance Variation vs. Drain Current and Gate Voltage

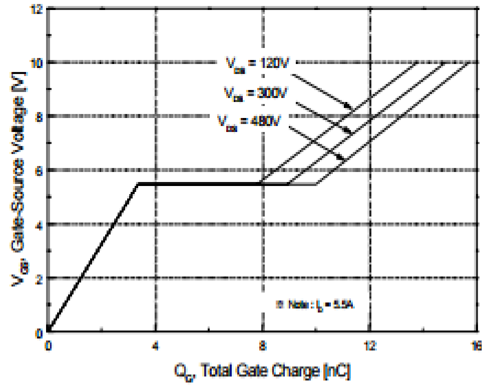

Figure 5. Gate Charge Characteristics

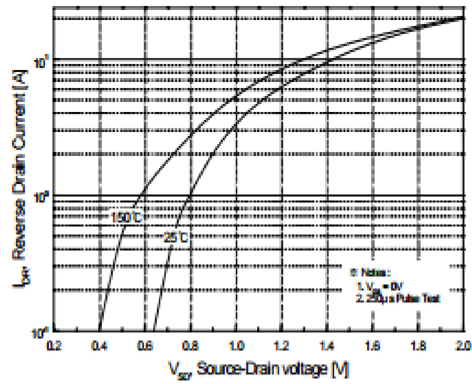

Figure 6. Body Diode Forward Voltage Variation vs. Source Current and Temperature

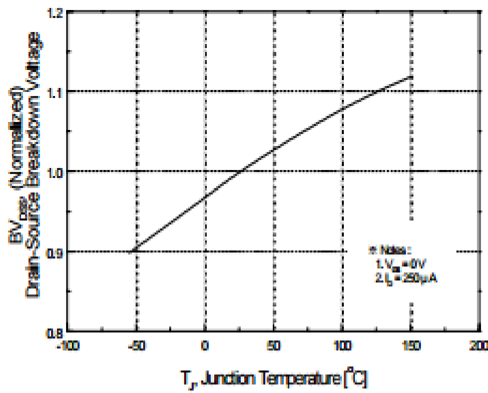

Figure 7.Breakdown Voltage Variation vs. Temperature

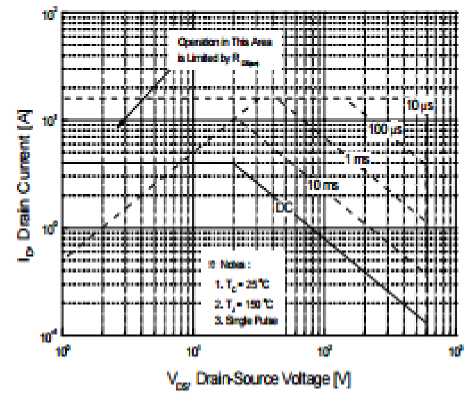

Figure 8.Maximum Safe Operating Area

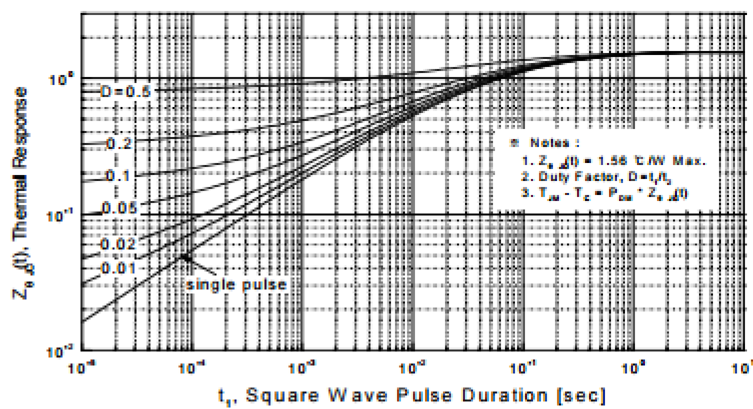

Figure 9. Transient Thermal Response Curve