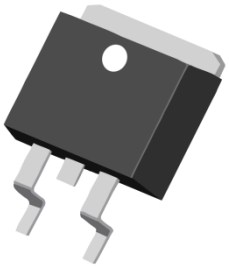
Description

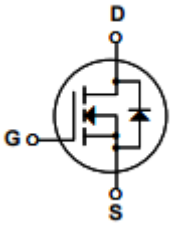
This N-channel MOSFETS use advanced trench technology and design to provide excellent RDS(on) with low gate charge. It can be used in a wide variety of applications.

Features

BVDSS	RDSON	ID
650V	2.7Ω	4A

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-263

Absolute Maximum Ratings T_C=25℃,unless otherwise noted

Symbol	Parameter	Ratings	Units
VDS	Drain-Source Voltage	650	V
VGS	Gate-Source Voltage	±20	V
ID	Continuous Drain Current-1	4.0	A
	Continuous Drain Current-T=100℃	2.8	
	Pulsed Drain Current2	17.6	
EAS	Single Pulse Avalanche Energy3	260	mJ
PD	Power Dissipation4	106	W
TJ, TSTG	Operating and Storage Junction Temperature Range	-55 to +150	℃

Thermal Characteristics

Symbol	Parameter	Ratings	Units
RθJC	Thermal Resistance, Junction to Case1	1.18	℃/W
RθJA	Thermal Resistance ,Junction to Ambient1	62.5	

Package Marking and Ordering Information

Part NO.	Marking	Package
KSMB4N65	KSMB4N65	TO-263

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	650	—	—	v
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=0V, V_{DS}=32V	—	—	10	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	3.0	—	5.0	V
$R_{DS(ON)}$	Drain-Source On Resistance[2]	V_{DS}=10V,I_D=6A	—	1.77	2.7	Ω
		V_{DS}=2.5V,I_D=5A	—	—	—	---
G_{FS}	Forward Transconductance	V_{DS}=5V,I_D=12A	—	4.0	—	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V, f=1MHz	—	520	670	pF
C_{oss}	Output Capacitance		—	70	90	
C_{rss}	Reverse Transfer Capacitance		—	8	11	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=20V, V_{GS}=10V,R_{GEN}=3.3Ω	—	13	35	ns
t_r	Rise Time		—	45	100	ns
$t_{d(off)}$	Turn-Off Delay Time		—	25	60	ns
t_f	Fall Time		—	35	80	ns
Q_g	Total Gate Charge	V_{GS}=4.5V, V_{DS}=20V, I_D=6A	—	15	20	nC
Q_{gs}	Gate-Source Charge		—	3.4	—	nC
Q_{gd}	Gate-Drain “Miller” Charge		—	7.1	—	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	—	250	—	ns
Q_{rr}	Reverse Recovery Charge		—	1.5	—	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 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

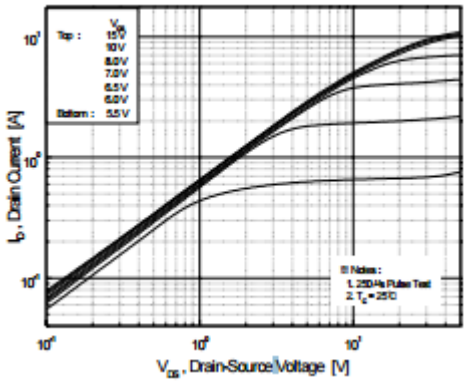


Figure 1. On-Region Characteristics

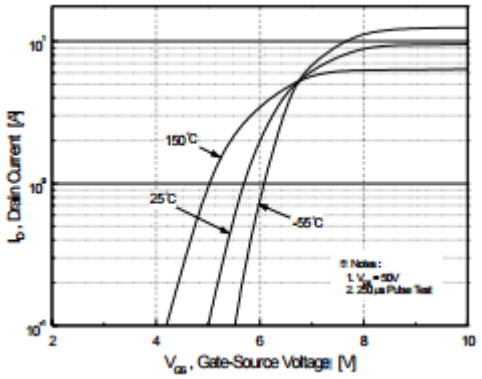


Figure 2. Transfer Characteristics

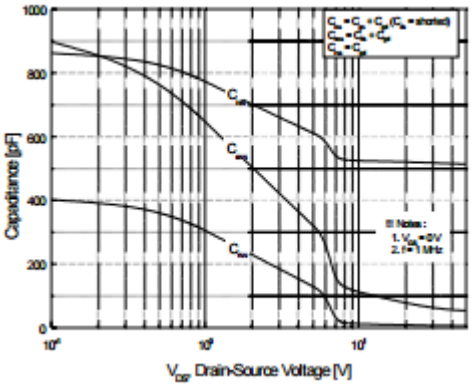


Figure 3. Capacitance Characteristics

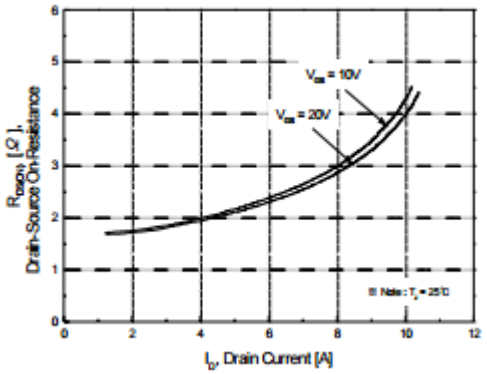


Figure 4. On-Resistance Variation vs. Drain Current and Gate Voltage

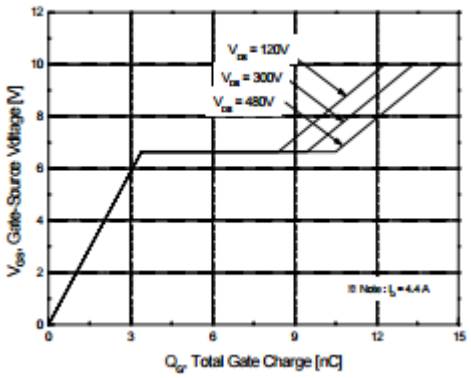


Figure 5. Gate Charge Characteristics

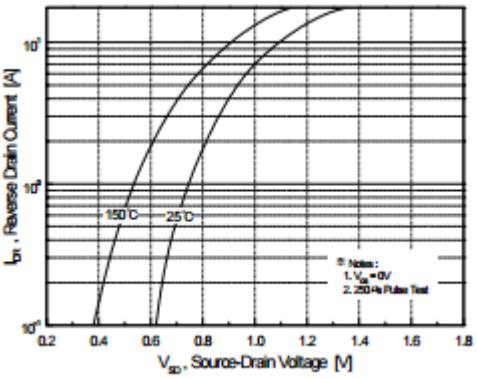


Figure 6. Body Diode Forward Voltage Variation vs. Source Current and Temperature

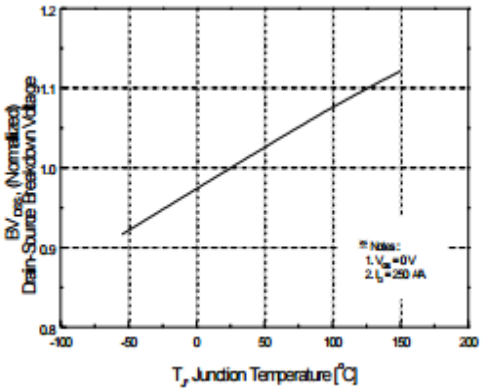


Figure 7.Breakdown Voltage Variation vs. Temperature

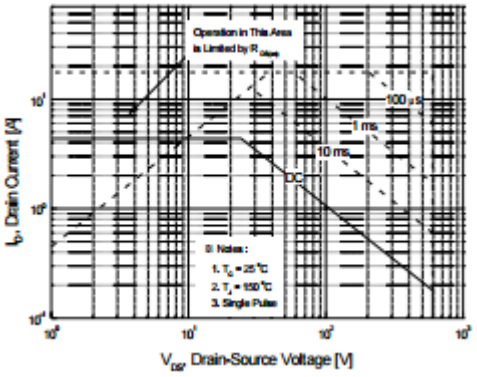


Figure 8.Maximum Safe Operating Area

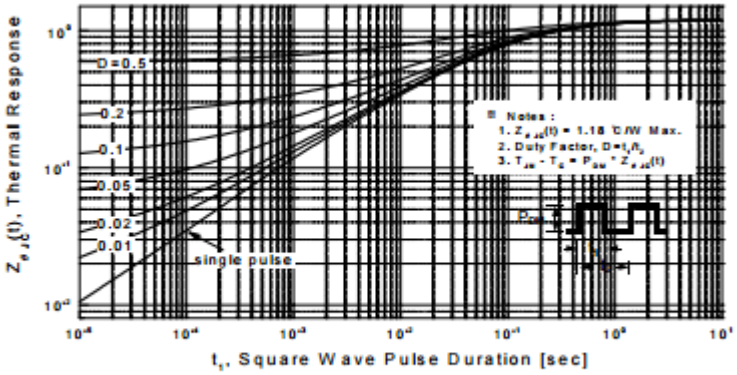


Figure 11. Transient Thermal Response Curve

Figure 9. Transient Thermal Response Curve