KERSMI ELECTRONIC CO.,LTD. 500V N-channel MOSFET

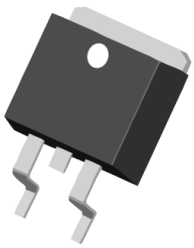
Description

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
500V	0.9Ω	9A

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.



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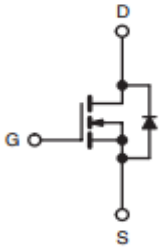

Absolute Maximum Ratings T_C=25℃,unless otherwise noted

Symbol	Parameter	Ratings	Units
VDS	Drain-Source Voltage	500	V
VGS	Gate-Source Voltage	±20	V
ID	Continuous Drain Current-1	9.0	A
	Continuous Drain Current-T=100℃	5.1	
	Pulsed Drain Current2	32	
EAS	Single Pulse Avalanche Energy3	510	mJ
PD	Power Dissipation4	125	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	62	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient1	1.0	

Package Marking and Ordering Information

Part NO.	Marking	Package
KSMB840	KSMB840	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	500	—	—	v
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=0V, V_{DS}=32V	—	—	25	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	—	—	0.9	Ω
		V_{DS}=2.5V,I_D=5A	—	—	—	---
G_{FS}	Forward Transconductance	V_{DS}=5V,I_D=12A	4.9	—	—	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V, f=1MHz	—	1300	—	pF
C_{oss}	Output Capacitance		—	310	—	
C_{rss}	Reverse Transfer Capacitance		—	120	—	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=20V, V_{GS}=10V,R_{GEN}=3.3Ω	—	14	—	ns
t_r	Rise Time		—	23	—	ns
$t_{d(off)}$	Turn-Off Delay Time		—	49	—	ns
t_f	Fall Time		—	20	—	ns
Q_g	Total Gate Charge	V_{GS}=4.5V, V_{DS}=20V, I_D=6A	—	—	63	nC
Q_{gs}	Gate-SourceCharge		—	—	9.3	nC
Q_{gd}	Gate-Drain “Miller” Charge		—	—	32	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode ForwardVoltage[2]	V_{GS}=0V,I_S =1A	—	—	8.0	V
t_{rr}	Reverse Recovery Time	I_F=7A,di/dt=100A/μS	—	460	970	ns
Q_{rr}	Reverse Recovery Charge		—	4.2	8.9	nC

Notes:

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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

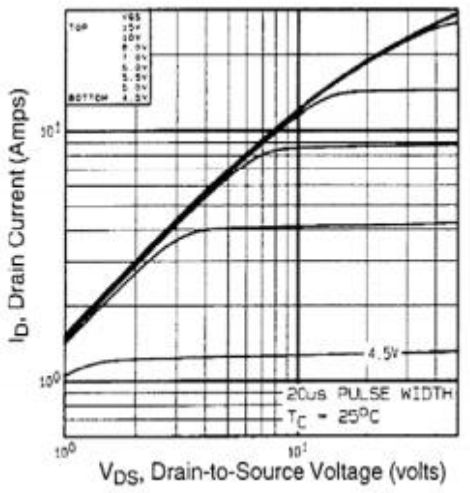

Fig. 1 Typical Output Characteristics, TC = 25 °

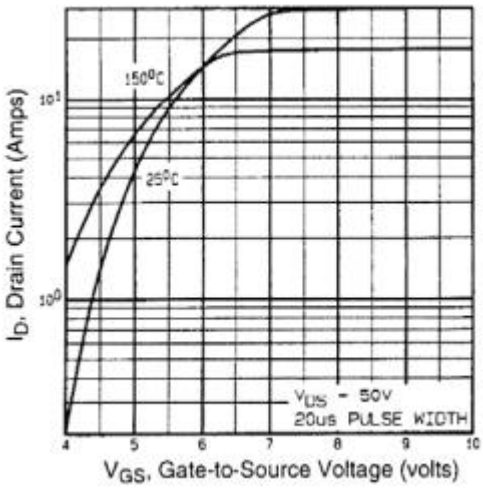

Fig. 2 Typical Transfer Characteristics

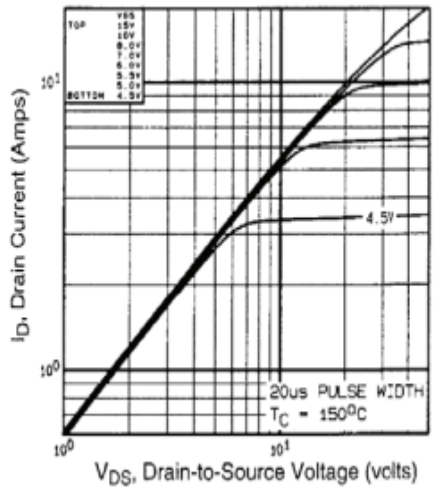

Fig. 3 Typical Output Characteristics, TC = 150 °C

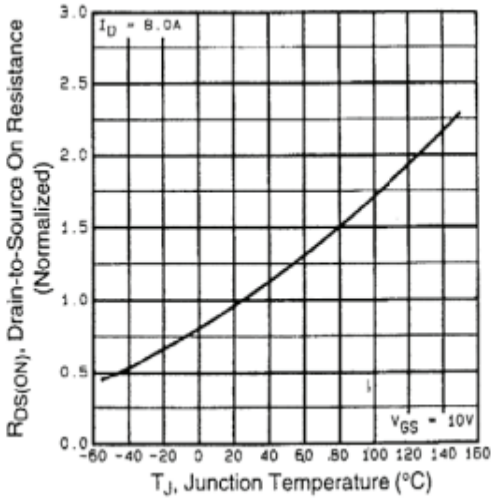

Fig. 4 - Normalized On-Resistance vs. Temperature

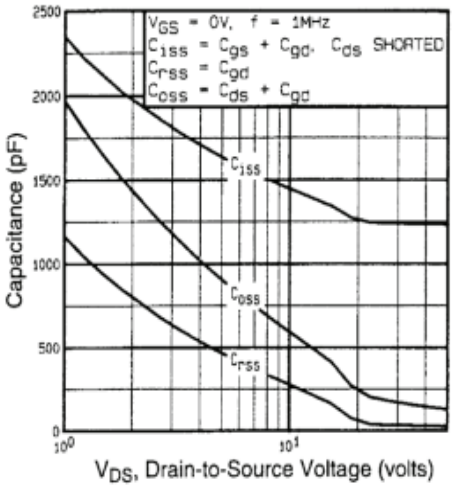

Fig. 5 - Typical Capacitance vs. Drain-to-Source Voltage

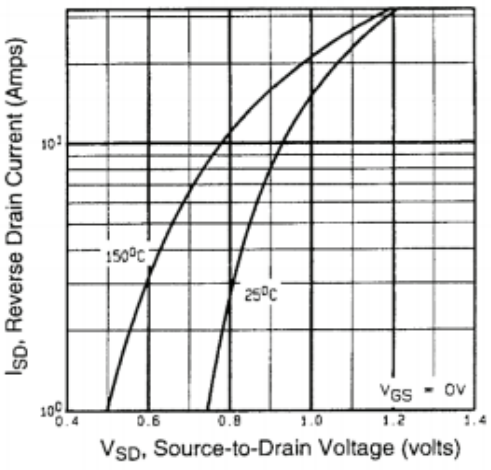

Fig. 6 - Typical Source-Drain Diode Forward Voltage

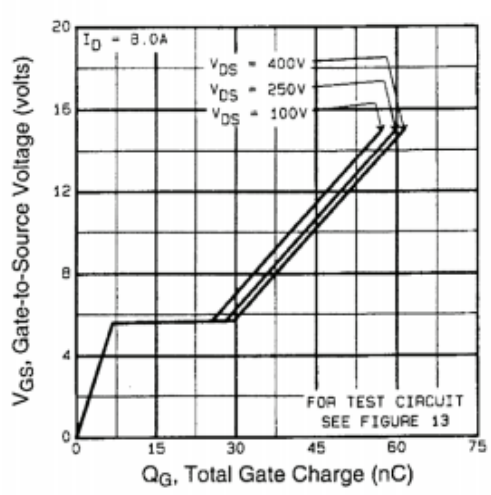

Fig. 7 - Typical Gate Charge vs. Gate-to-Source Voltage

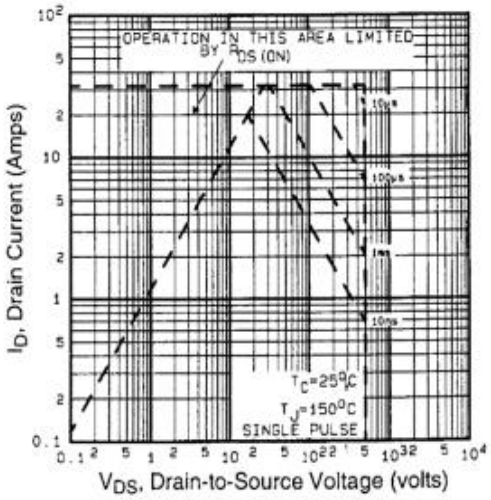

Fig. 8 - Maximum Safe Operating Area

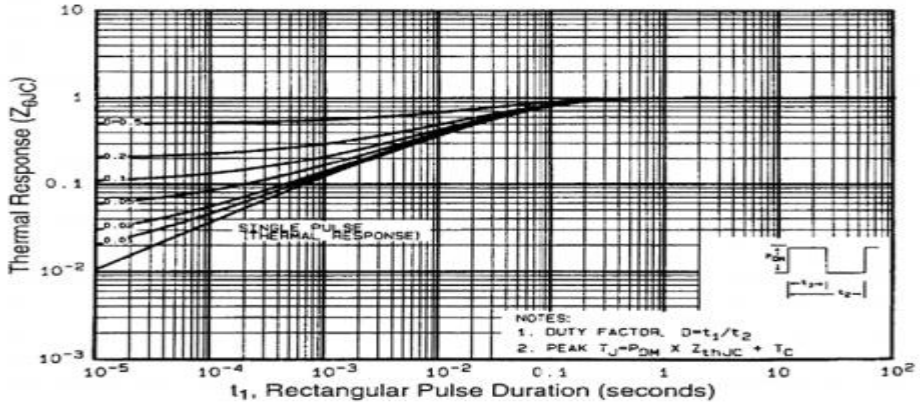

Fig. 9 - Maximum Effective Transient Thermal Impedance, Junction-to-Case