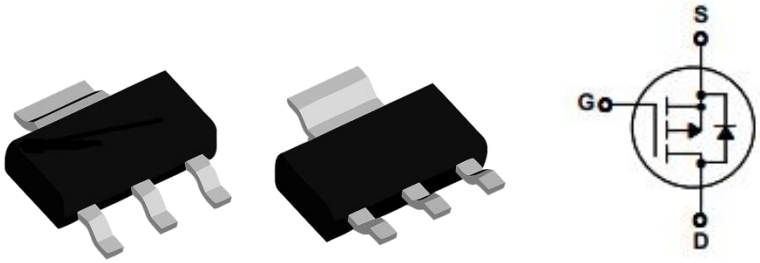
Description

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	RDSON	ID
-30V	130MΩ	3.4A

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.



SOT-223

Absolute Maximum Ratings T_C=25℃,unless otherwise noted

Symbol	Parameter	Ratings	Units
VDS	Drain-Source Voltage	-30	V
VGS	Gate-Source Voltage	±20	V
ID	Continuous Drain Current-1	3.4	A
	Continuous Drain Current-T=100℃	10	
	Pulsed Drain Current2	—	
EAS	Single Pulse Avalanche Energy3	—	mJ
PD	Power Dissipation4	30	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	42	℃/W
$R_{\theta JA}$	Thermal Resistance ,Junction to Ambient1	12	

Package Marking and Ordering Information

Part NO.	Marking	Package
KSMT458P	KSMT458P	SOT-223

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	-30	—	—	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	-1	-1.8	-3	V
$R_{DS(ON)}$	Drain-Source On Resistance[2]	V_{DS}=10V,I_D=6A	—	105	130	MΩ
		V_{DS}=2.5V,I_D=5A	—	157	200	
G_{FS}	Forward Transconductance	V_{DS}=5V,I_D=12A	—	3	—	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V, f=1MHz	—	205	—	pF
C_{oss}	Output Capacitance		—	55	—	
C_{rss}	Reverse Transfer Capacitance		—	26	—	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=20V, V_{GS}=10V,R_{GEN}=3.3Ω	—	4.5	9	ns
t_r	Rise Time		—	12.5	23	ns
$t_{d(off)}$	Turn-Off Delay Time		—	11	20	ns
t_f	Fall Time		—	2	4	ns
Q_g	Total Gate Charge	V_{GS}=4.5V, V_{DS}=20V, I_D=6A	—	2.5	3.5	nC
Q_{gs}	Gate-Source Charge		—	0.7	—	nC
Q_{gd}	Gate-Drain “Miller” Charge		—	1	—	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode ForwardVoltage[2]	V_{GS}=0V,I_S =1A	—	-0.8	-12	V
t_{rr}	Reverse Recovery Time	I_F=7A,di/dt=100A/μS	—	—	—	ns
Q_{rr}	Reverse Recovery Charge		—	—	—	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

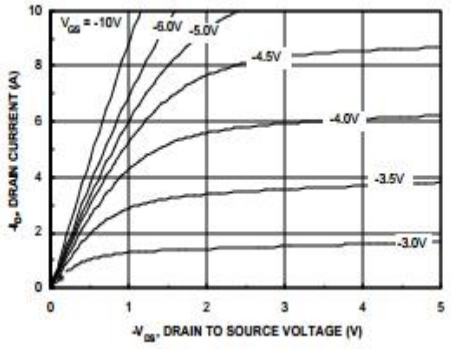


Figure 1. On-Region Characteristics

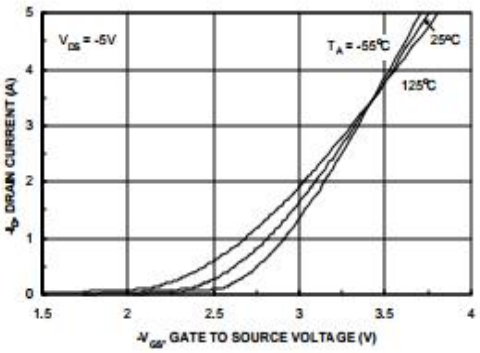


Figure 2. Transfer Characteristics

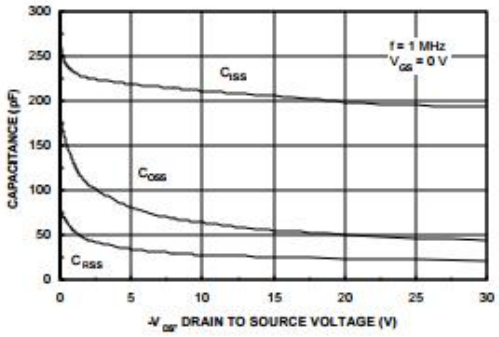


Figure 3. Capacitance Characteristics

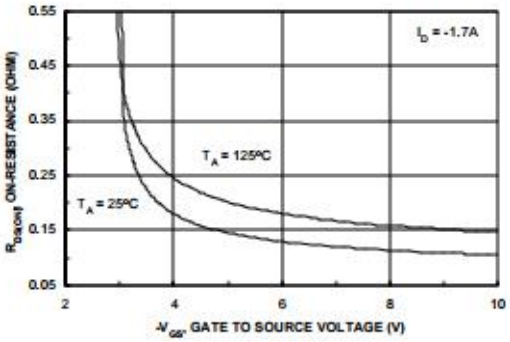


Figure 4. On-Resistance Variation vs. Drain Current and Gate Voltage

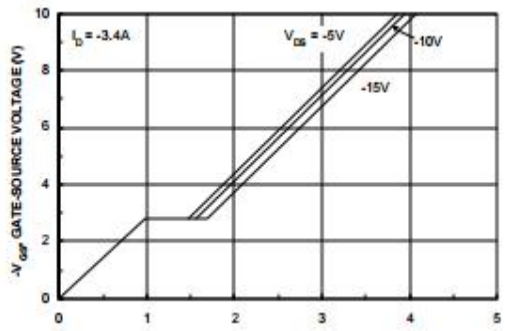


Figure 5. Gate Charge Characteristics

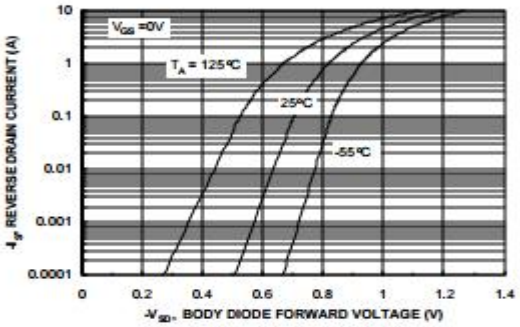


Figure 6. Body Diode Forward Voltage Variation vs. Source Current and Temperature

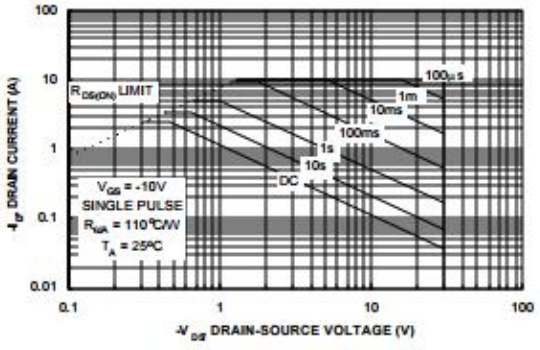


Figure 7. Maximum Safe Operating Area.

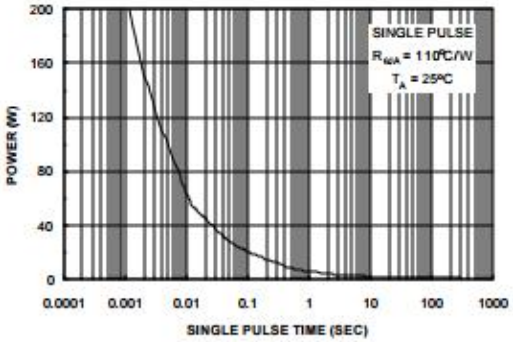


Figure 8. Single Pulse Maximum Power Dissipation.

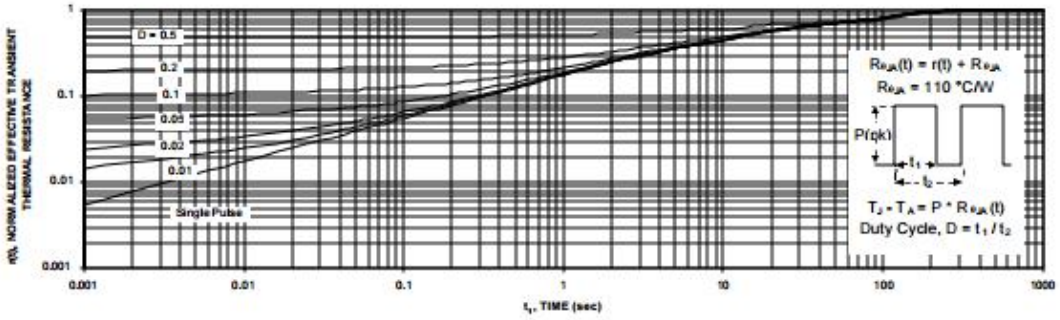


Figure 9. Transient Thermal Response Curve