

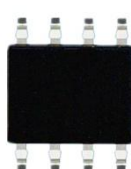
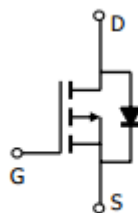
Description

This P-channel MOSFET s 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
-20V	0.024Ω	-8.0A

- 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.



SOP-8

Absolute Maximum Ratings $T_C=25^{\circ}\text{C}$, unless otherwise noted

Symbol	Parameter	Ratings	Units
VDS	Drain-Source Voltage	-20	V
VGS	Gate-Source Voltage	±8	V
ID	Continuous Drain Current-1	-8	A
	Continuous Drain Current- $T=100^{\circ}\text{C}$	-50	
	Pulsed Drain Current ²	—	
EAS	Single Pulse Avalanche Energy ³	—	mJ
PD	Power Dissipation ⁴	2.5	W
TJ, TSTG	Operating and Storage Junction Temperature Range	-55 to +150	°C

Thermal Characteristics

Symbol	Parameter	Ratings	Units
$R_{\theta JC}$	Thermal Resistance ,Junction to Case1	50	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient1	25	

Package Marking and Ordering Information

Part NO.	Marking	Package
KSMP6375	KSMP6375	SOP-8

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 =250μA	-20	—	—	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =0V, V _{GS} =32V	—	—	-1	μA
I _{GSS}	Gate-Source Leakage Current	V _{DS} =±20V, V _{GS} =0A	—	—	±100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{DS} =V _{DS} , I _D =250μA	-0.4	-0.8	-1.5	V
R _{DS(ON)}	Drain-Source On Resistance ²	V _{DS} =10V, I _D =6A	—	0.019	0.024	Ω
		V _{DS} =2.5V, I _D =5A	—	0.026	0.039	
G _{FS}	Forward Transconductance	V _{DS} =5V, I _D =12A	—	—	—	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	—	2260	—	pF
C _{oss}	Output Capacitance		—	500	—	
C _{rss}	Reverse Transfer Capacitance		—	205	—	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =20V, V _{GS} =10V, R _{GEN} =3.3Ω	—	8	16	ns
t _r	Rise Time		—	15	27	ns
t _{d(off)}	Turn-Off Delay Time		—	98	135	ns
t _f	Fall Time		—	35	55	ns
Q _g	Total Gate Charge	V _{GS} =4.5V, V _{DS} =20V, I _D =6A	—	23	33	nC
Q _{gs}	Gate-Source Charge		—	5.5	—	nC
Q _{gd}	Gate-Drain “Miller” Charge		—	4	—	nC
Drain-Source Diode Characteristics						
V _{SD}	Source-Drain Diode Forward Voltage ²	V _{GS} =0V, I _S =1A	—	-0.75	-1.2	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 $\leq 300\mu s$, duty cycles $\leq 2\%$
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 $^{\circ}C$ junction temperature.

Typical Characteristics $T_J=25^{\circ}C$ unless otherwise noted

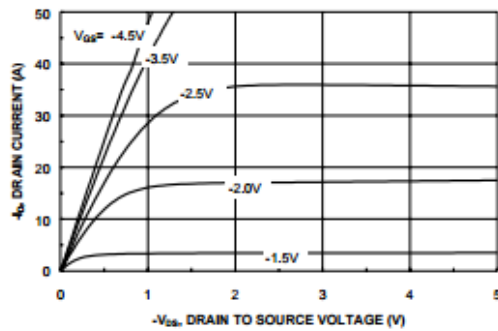


Figure 1. On-Region Characteristics

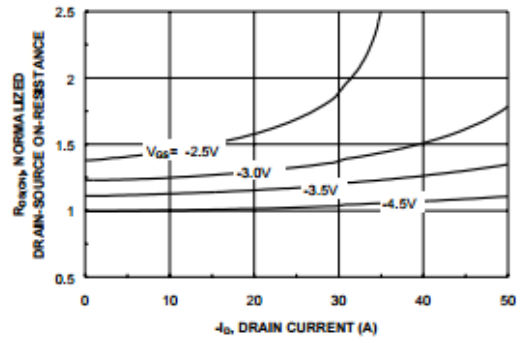


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage.

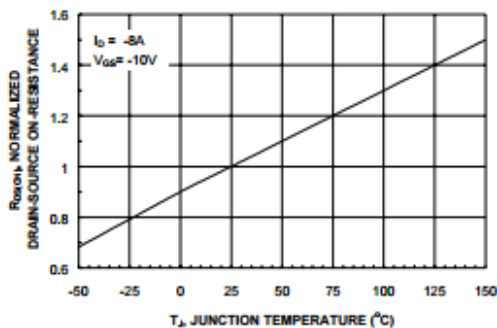


Figure 3. On-Resistance Variation with Temperature .

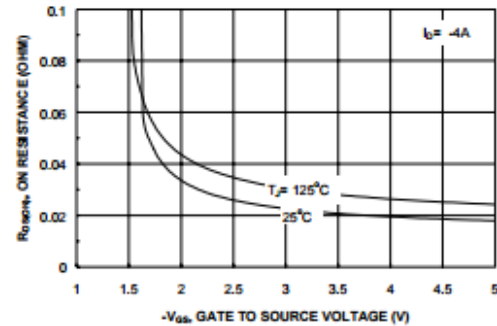
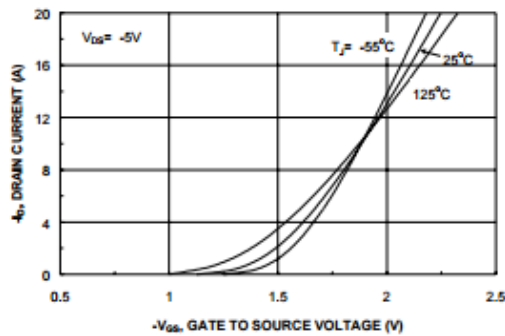
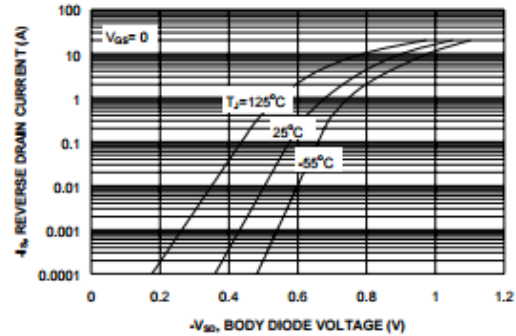
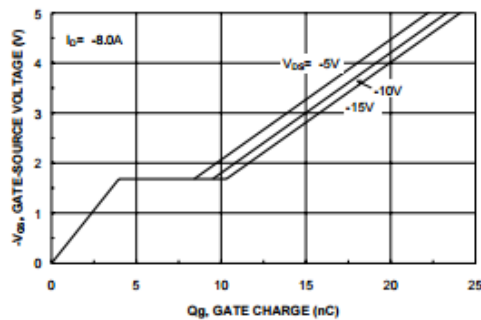
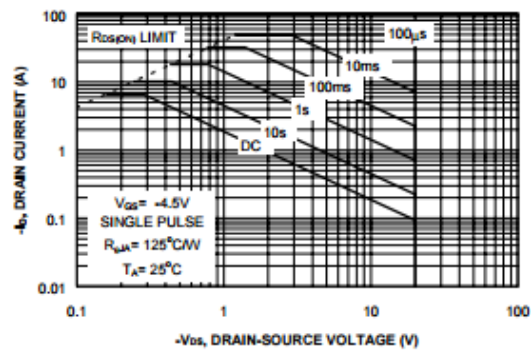
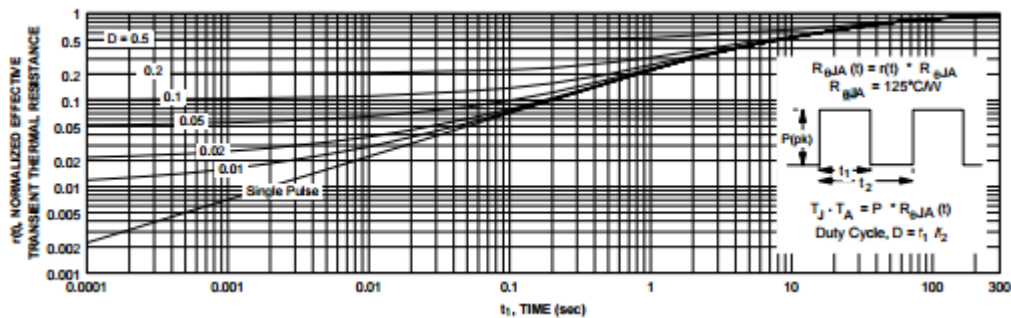


Figure 4. On-Resistance Variation Gate-to-Source Voltage


Figure 5. Transfer Characteristics

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

Figure 7. Gate Charge Characteristics.

Figure 8. Maximum Safe Operating Area.

Figure 9: Normalized Maximum Transient Thermal Impedance