

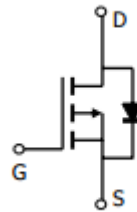
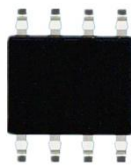
Description

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	RDS(ON)	ID
-30V	50MΩ	-5.3A

- 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	-30	V
VGS	Gate-Source Voltage	± 20	V
ID	Continuous Drain Current-1	-5.3	A
	Continuous Drain Current-T=100°C	-5.0	
	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 +175	°C

Thermal Characteristics

Symbol	Parameter	Ratings	Units
$R_{\theta JC}$	Thermal Resistance ,Junction to Case1	150	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient1	25	

Package Marking and Ordering Information

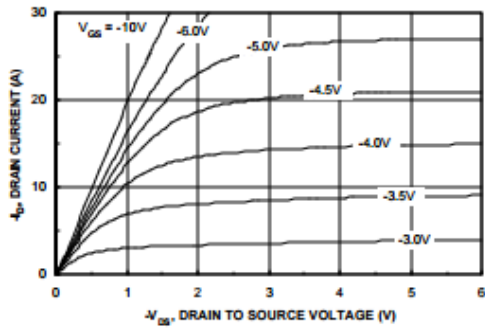
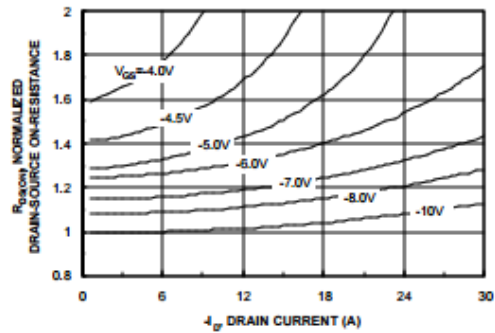
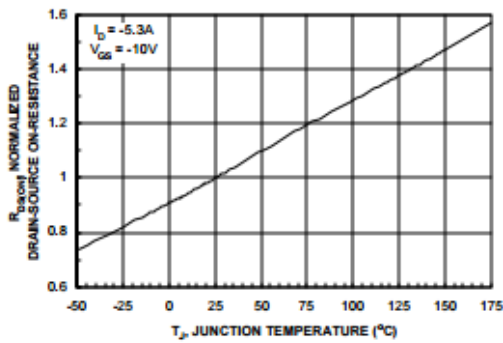
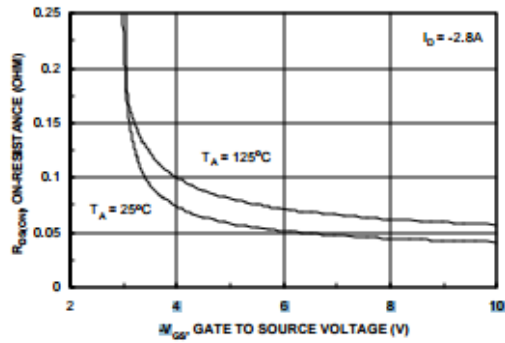
Part NO.	Marking	Package
KSMP4141	KSMP4141	SOP-8

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	$V_{DS}=0V, I_D=250\mu A$	-30	—	—	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=0V, V_{GS}=32V$	—	—	-1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{DS}=\pm 20V, V_{GS}=0A$	—	—	± 100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{DS}=V_{DS}, I_D=250\mu A$	-1	-1.7	-3	V
$R_{DS(on)}$	Drain-Source On Resistance ²	$V_{DS}=10V, I_D=6A$	—	42	50	M Ω
		$V_{DS}=2.5V, I_D=5A$	—	65	80	
G_{FS}	Forward Transconductance	$V_{DS}=5V, I_D=12A$	—	10	—	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V,$ $f=1MHz$	—	528	—	pF
C_{oss}	Output Capacitance		—	132	—	
C_{rss}	Reverse Transfer Capacitance		—	70	—	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=20V,$	—	7	14	ns
t_r	Rise Time		—	13	24	ns
$t_{d(off)}$	Turn-Off Delay Time	$V_{GS}=10V, R_{GEN}=3.3\Omega$	—	14	25	ns
t_f	Fall Time		—	7	—	ns
Q_g	Total Gate Charge	$V_{GS}=4.5V, V_{DS}=20V,$ $I_D=6A$	—	10	14	nC
Q_{gs}	Gate-Source Charge		—	2.2	—	nC
Q_{gd}	Gate-Drain "Miller" Charge		—	2	—	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage ²	$V_{GS}=0V, I_S=1A$	—	-0.8	-1.2	V
t_{rr}	Reverse Recovery Time	$I_F=7A, di/dt=100A/\mu S$	—	—	—	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°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 with Gate-to-Source Voltage.

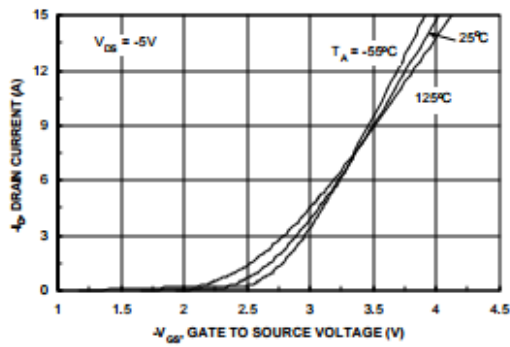


Figure 5. Transfer Characteristics

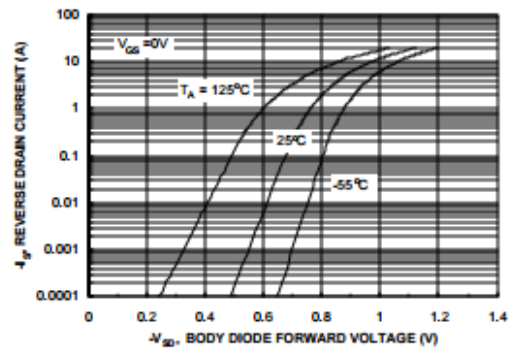


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature.

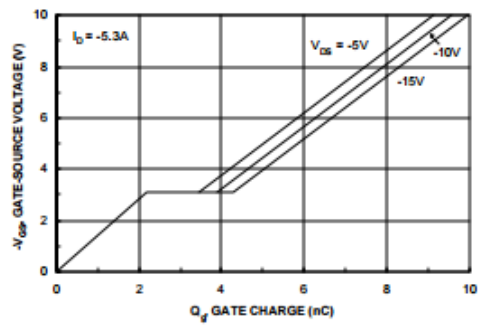


Figure 7: Gate-Charge Characteristics

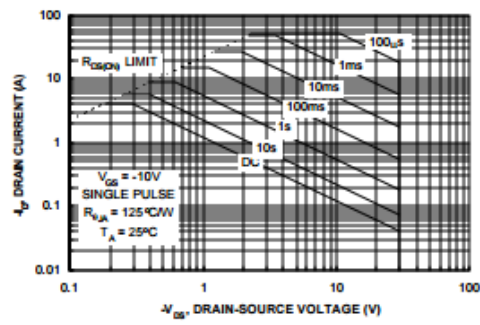


Figure 8: Maximum Safe Operating Area

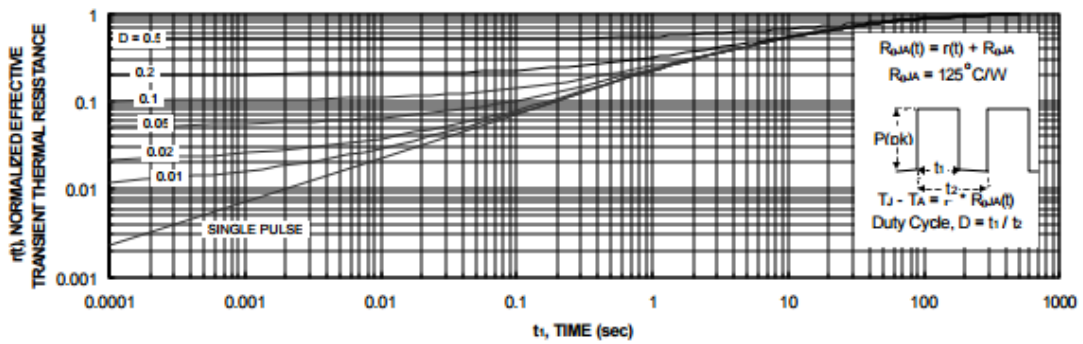


Figure 9: Normalized Maximum Transient Thermal Impedance