

FEATURES

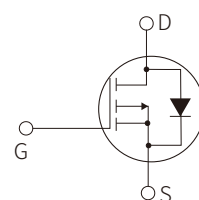
- | Surface-mounted package
- | Advanced trench cell design

APPLICATION

- | Portable appliances
- | High speed switch
- | Battery management
- | Low power DC to DC Converter

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-150	V
Pulsed Drain Current	I_{DM}^{***}	-4.4	A
Maximum Drain Current - Continuous $T_A=25^{\circ}\text{C}$	I_D^*	-1.1	A
Maximum Drain Current - Continuous $T_A=100^{\circ}\text{C}$	I_D^*	-0.73	A
Gate Threshold Voltage	V_{GS}	± 20	V
Total Power Dissipation	P_{tot}	0.83	W
Diode Forward Current $T_A=25^{\circ}\text{C}$	I_S	-1.1	A
Maximum Junction Temperature	T_J	-55 ~ +150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$
Maximum Resistance –Junction to Ambient	$R_{\theta JA}^*$	150	$^{\circ}\text{C/W}$

Notes:

* Surface Mounted on 1 in² pad area, $t \leq 10$ sec

** Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_{DS}=-250\mu A$	-150			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-1.4		-3.5	V
Drain Leakage Current	I_{DSS}	$V_{DS}=-80V, V_{GS}=0V$			-1	μA
Drain Leakage Current ($T_J=85^{\circ}C$)		$V_{DS}=-80V, V_{GS}=0V, T_J=85^{\circ}C$			-30	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Drain-source on-resistance	$R_{DS(on)}^a$	$V_{GS}=-10V, I_{DS}=-1A$		750	800	m Ω
		$V_{GS}=-6V, I_{DS}=-0.5A$		900	980	m Ω
Diode Characteristics						
Diode Forward Voltage	V_{SD}^a	$I_{SD}=-1A, V_{GS}=0V$			-1.3	V
Reverse Recovery Time	t_{rr}	$I_{SD}=-1A, dI_{SD}/dt=100A/\mu s$		21		nS
Reverse Recovery Charge	Q_{rr}			17		nC
Diode Characteristics ^b						
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=-50V,$ Frequency = 1 MHz		563		pF
Output capacitance	C_{oss}			26		pF
Reverse transfer capacitance	C_{rss}			1		pF
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=-50V, V_{GEN}=-10V$ $R_G=4.5\Omega, R_L=50\Omega,$ $I_{DS}=-1A$		6.8		nS
Turn-on Rise Time	t_r			20		nS
Turn-Off Delay Time	$t_{d(off)}$			145		nS
Turn-Off Fall Time	t_f			48		nS
Gate Charge Characteristics ^b						
Total Gate Charge	Q_g	$V_{GS}=-10V, V_{DS}=-50V, I_{DS}=-1A$		18		nC
Gate-Source Charge	Q_{gs}			3.5		nC
Gate-Drain Charge	Q_{gd}			2.2		nC

Notes:

a : Pulse test ; pulse width ≤ 300μs, duty cycle ≤ 2 %

b : Guaranteed by design, not subject to production testing

PARAMETER CHARACTERISTIC CURVE

Figure1: Power Capability

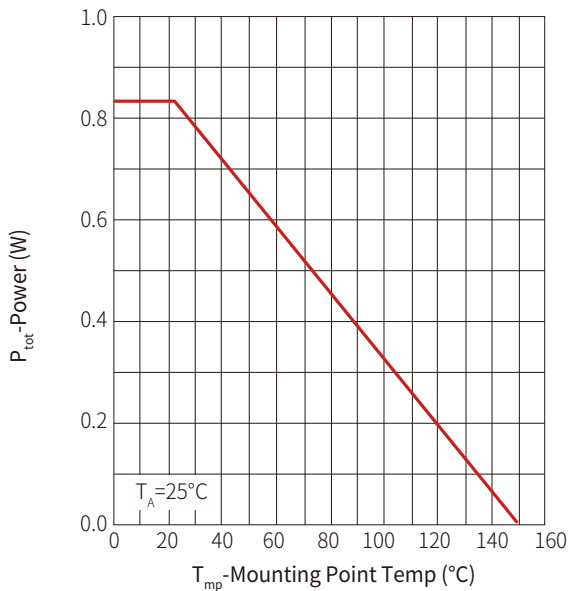


Figure2: Current Capability

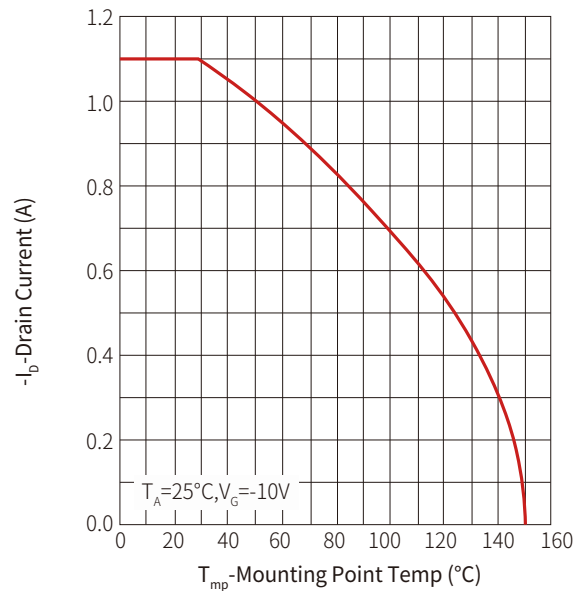


Figure3: Safe Operation Area

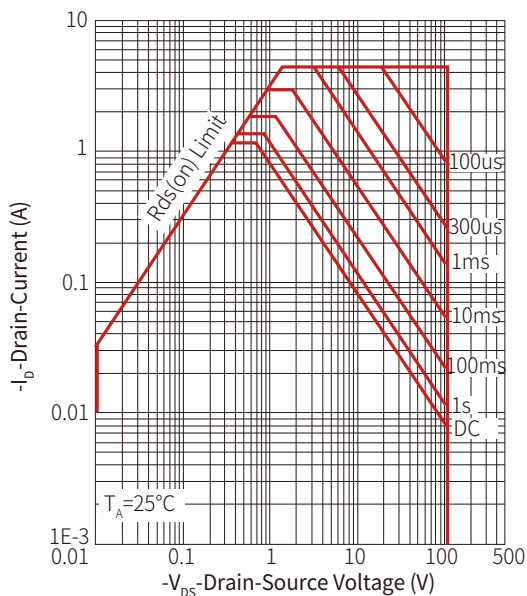


Figure 4: Transient Thermal Impedance

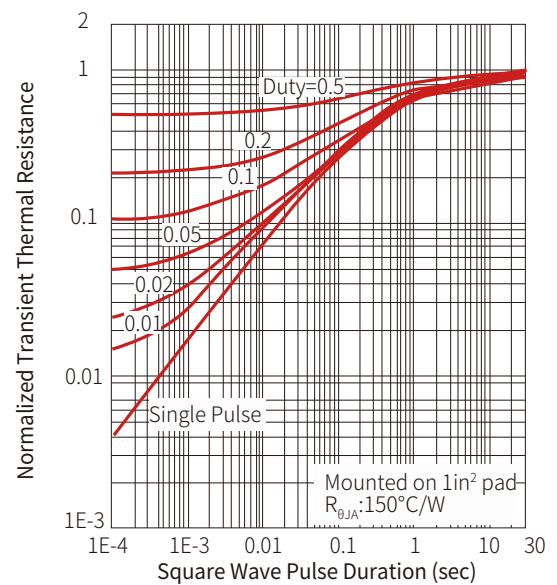


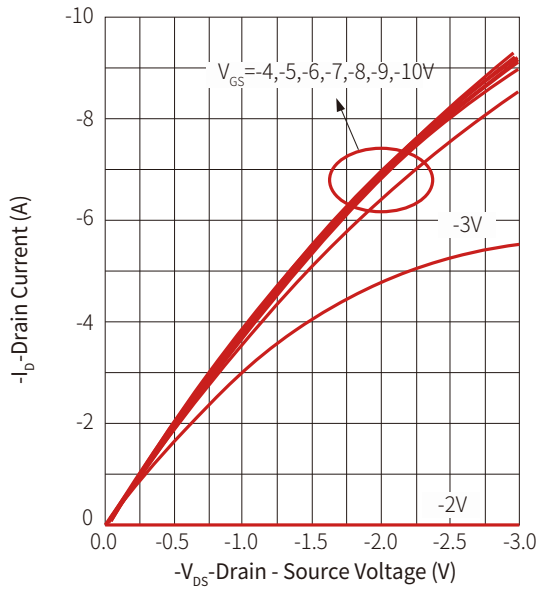
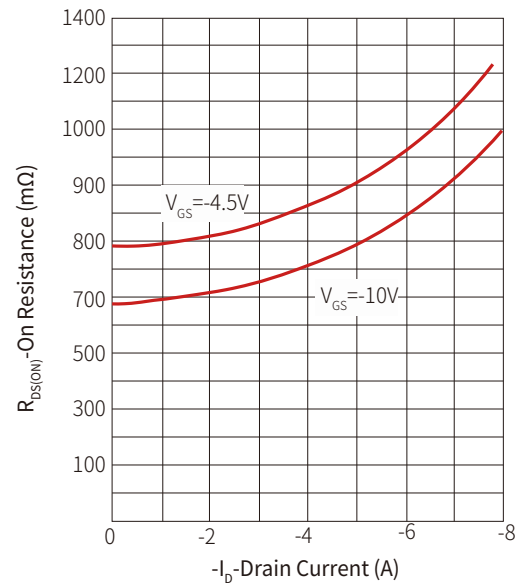
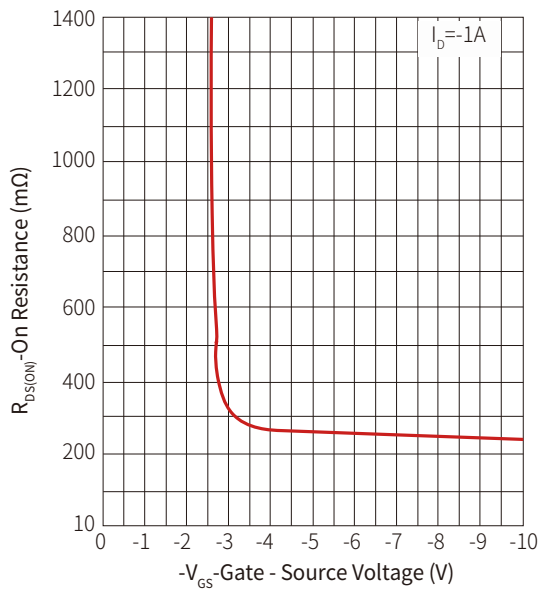
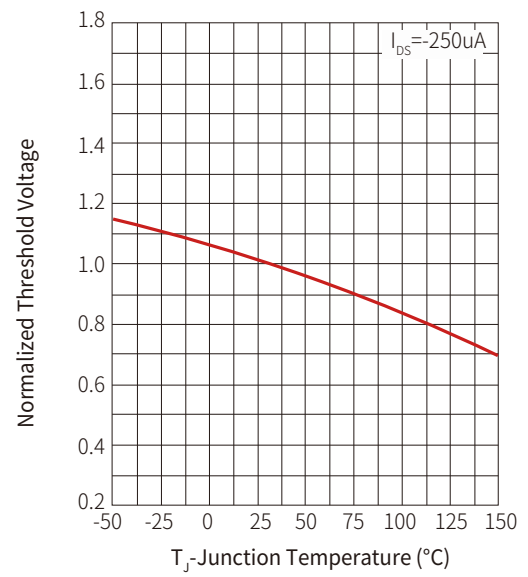
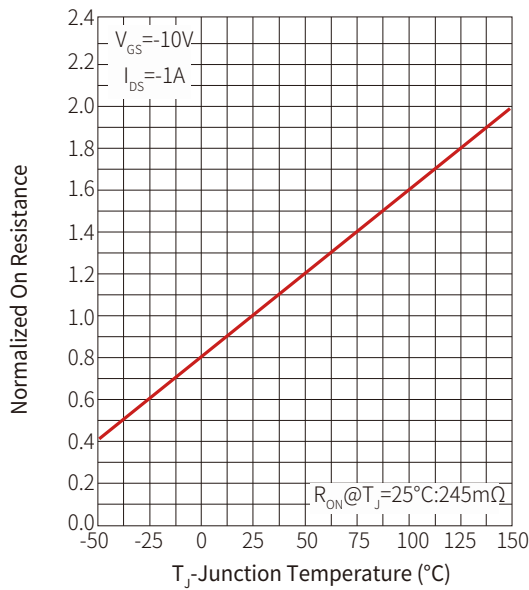
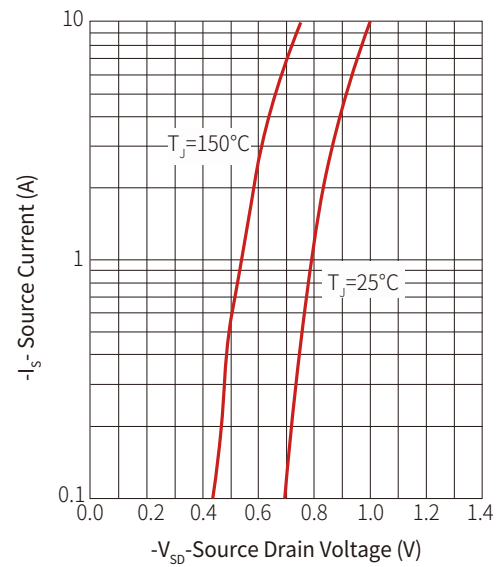
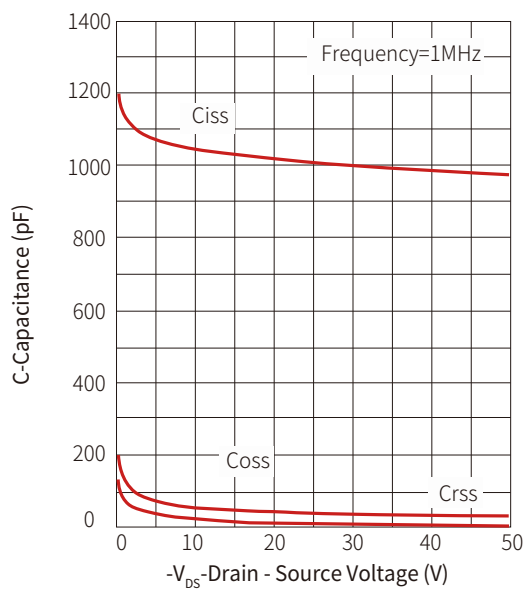
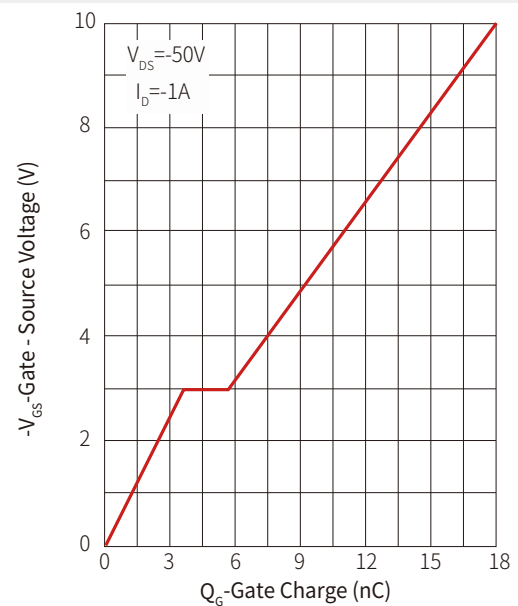
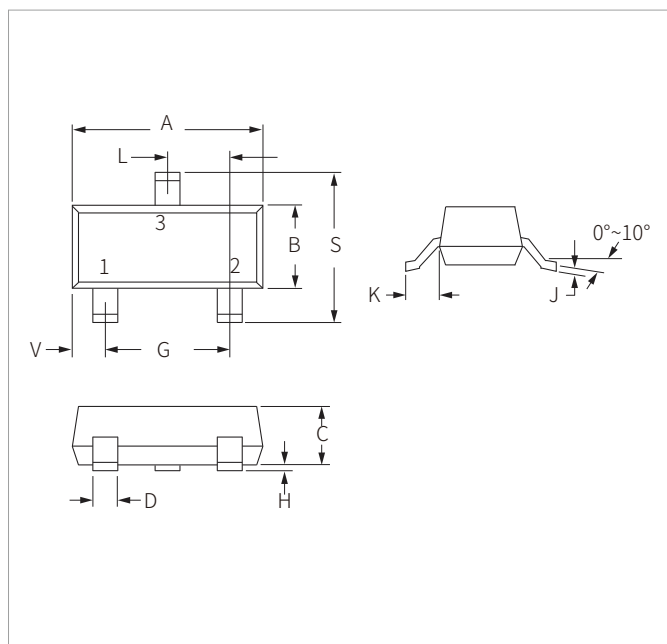
Figure 5: Output Characteristics

Figure 6: On Resistance

Figure 7: Transfer Characteristics

Figure 8: Normalized Threshold Voltage


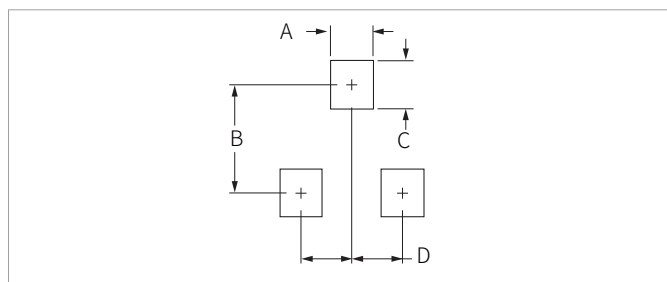
Figure 9: Normalized On Resistance

Figure 10: Diode Forward Current

Figure 11: Capacitance

Figure 12: Gate Charge


SOT-23 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.05	0.110	0.120
B	1.20	1.40	0.047	0.055
C	0.90	1.15	0.035	0.045
D	0.37	0.50	0.015	0.020
G	1.75	2.05	0.069	0.081
H	0.01	0.100	0.001	0.004
J	0.085	0.180	0.003	0.007
K	0.35	0.69	0.014	0.029
L	0.89	1.02	0.035	0.040
S	2.10	2.65	0.083	0.104
V	0.45	0.60	0.018	0.024

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.71	0.97	0.028	0.038
B	1.88	2.13	0.074	0.084
C	0.71	0.97	0.028	0.038
D	0.81	1.07	0.032	0.042

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SPM1KP15S	SOT-23	3000PCS	7"

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