

FEATURES

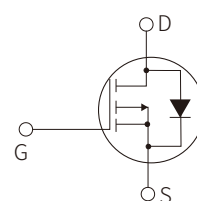
- | Surface-mounted package
- | Low gate charge

APPLICATION

- | Motor driver appliances
- | Adapter appliances
- | High power inverter system

APPROVALS

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



Schematic Symbol

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-40	V
Pulsed Drain Current	I_{DM}^{**}	-18.8	A
Maximum Drain Current - Continuous $T_A=25^{\circ}\text{C}$	I_D^*	-5.7	A
Maximum Drain Current - Continuous $T_A=100^{\circ}\text{C}$	I_D^*	-3	A
Gate Threshold Voltage	V_{GSS}	± 20	V
Total Power Dissipation	P_{tot}^*	2	W
Maximum Junction Temperature	T_J	-55 ~ +150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$
Thermal Resistance- Junction to Case	$R_{\theta JC}^*$	3.5	$^{\circ}\text{C/W}$
Maximum Resistance – Junction to Ambient	$R_{\theta JA}^*$	62.5	$^{\circ}\text{C/W}$

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} =-250μA	-40			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _{DS} =-250μA	-1		-2	V
Drain Leakage Current	I _{DSS}	V _{DS} =-32V, V _{GS} =0V			-1	μA
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±8	μA
Drain-source on-resistance	R _{DS(on)} ^a	V _{GS} =-10V, I _D =-4A		38	45	mΩ
		V _{GS} =-4.5V, I _D =-2A		51	70	mΩ
Diode Characteristics						
Diode Forward Voltage	V _{SD} ^a	I _{SD} =-4A, V _{GS} =0V			-1.3	V
Reverse Recovery Time	t _{rr}	I _{SD} =-4A, dI _{SD} /dt=100A/μs		11		nS
Reverse Recovery Charge	Q _{rr}			6.9		nC
Diode Characteristics ^b						
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-20V, Frequency = 1 MHz		783		pF
Output capacitance	C _{oss}			60		pF
Reverse transfer capacitance	C _{rss}			52		pF
Turn-on Delay Time	t _{d(on)}	V _{DS} =-20V, V _{GEN} =-10V R _G = 3.9Ω, R _L =5Ω, I _{DS} =-4A		5.8		nS
Turn-on Rise Time	t _r			31		nS
Turn-Off Delay Time	t _{d(off)}			149		nS
Turn-Off Fall Time	t _f			75		nS
Gate Charge Characteristics ^b						
Total Gate Charge	Q _g	V _{GS} =-10V, V _{DS} =-20V, I _{DS} =-4A		14		nC
Gate-Source Charge	Q _{gs}			3.8		nC
Gate-Drain Charge	Q _{gd}			1.8		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

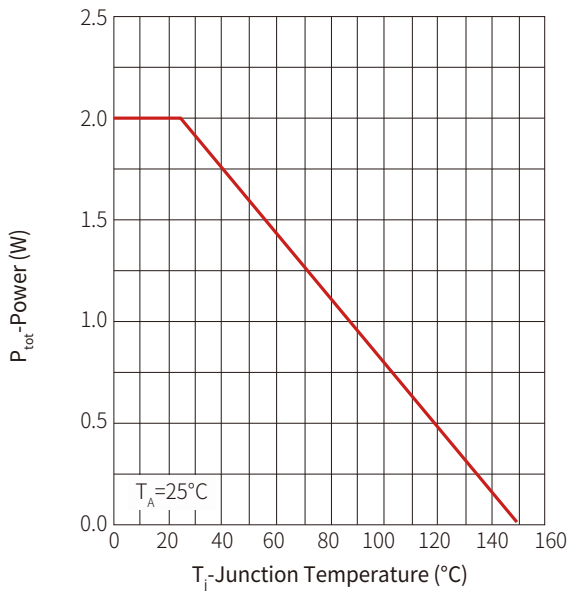


Figure2: Current Capability

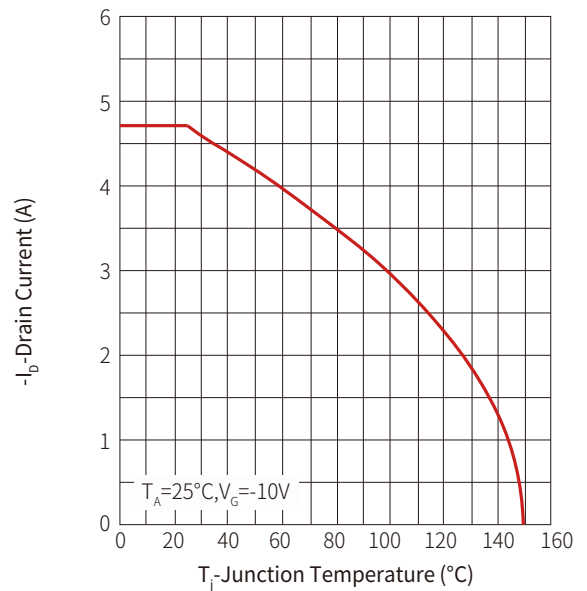


Figure3: Safe Operation Area

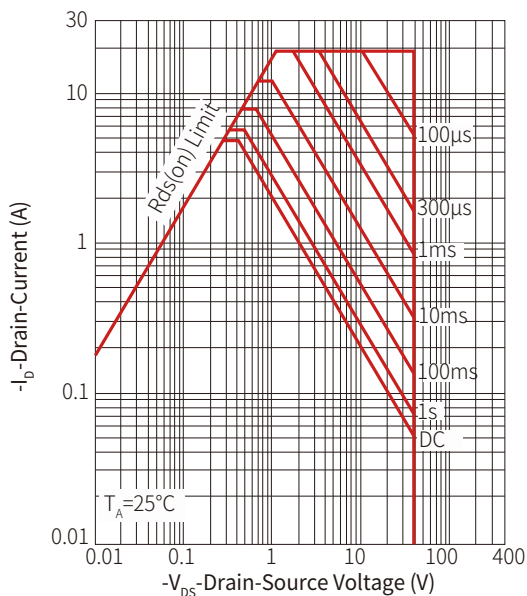


Figure 4: Transient Thermal Impedance

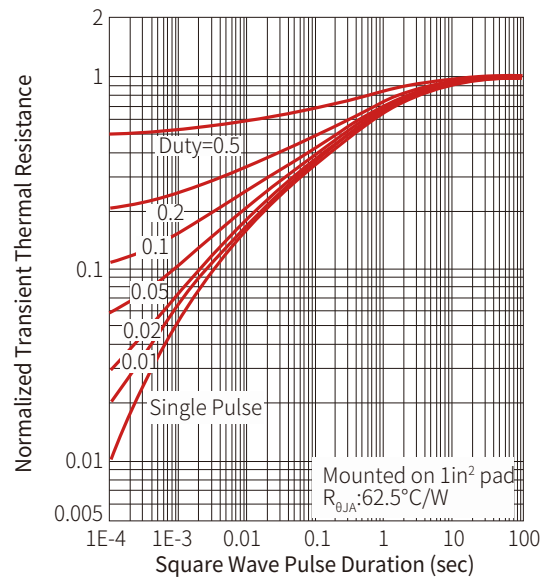


Figure 5: Output Characteristics

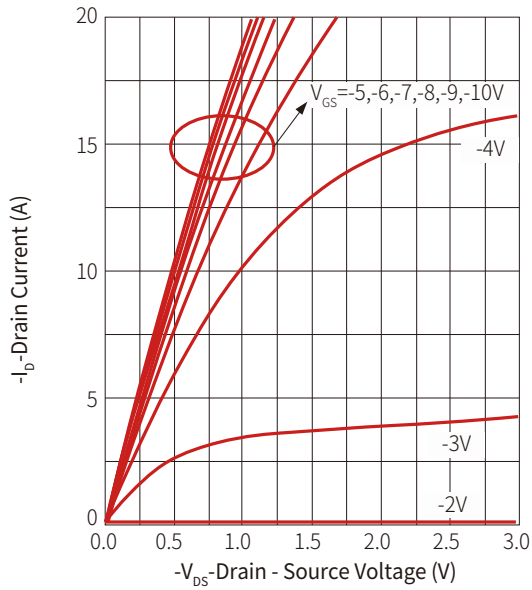


Figure 6: Drain-Source On Resistance

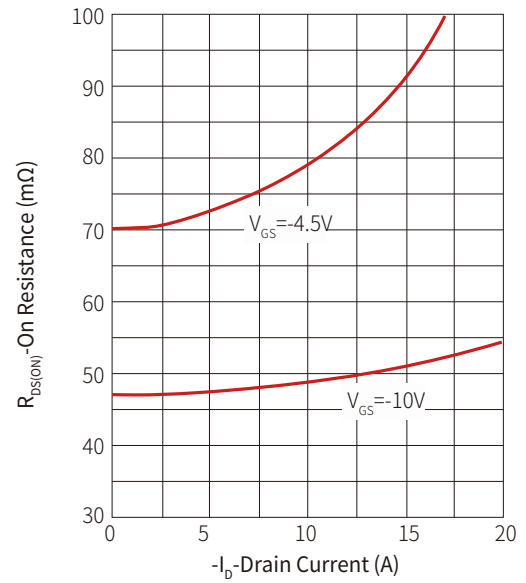


Figure 7: Transfer Characteristics

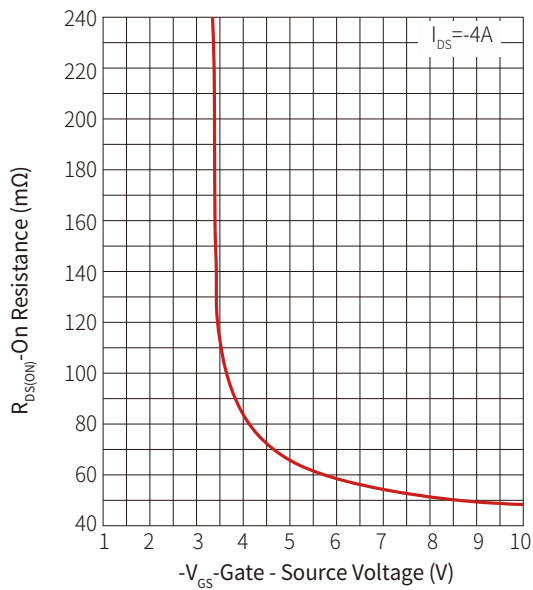


Figure 8: Gate Threshold Voltage

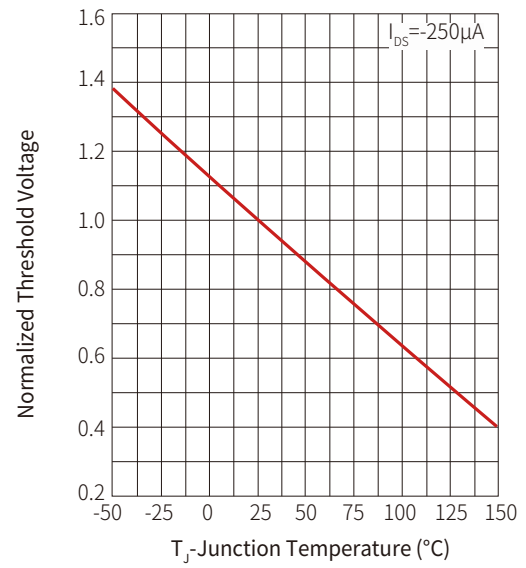
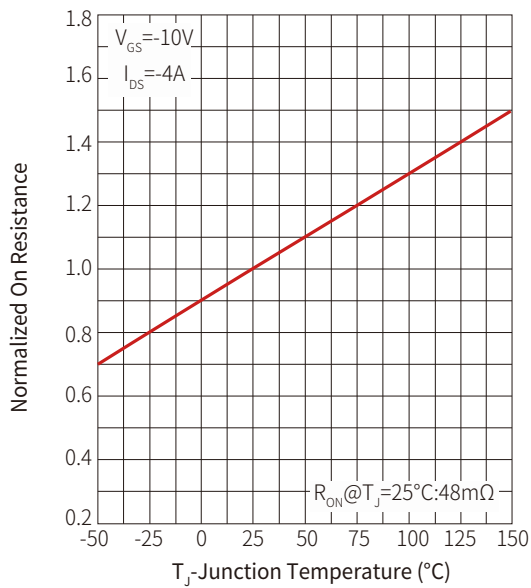
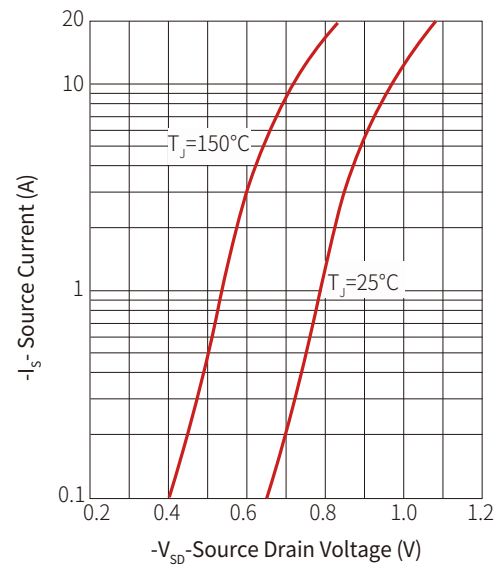
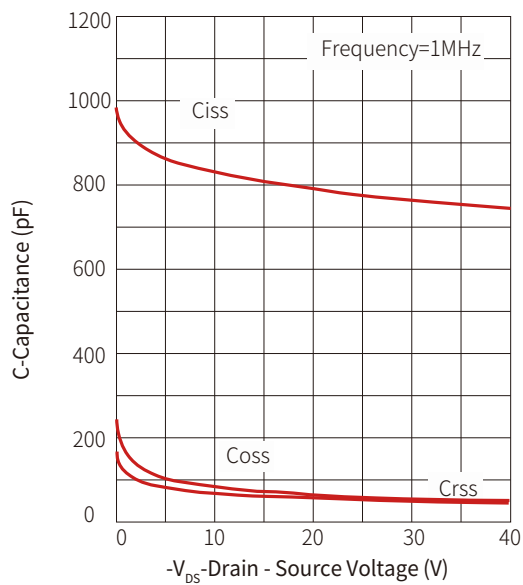
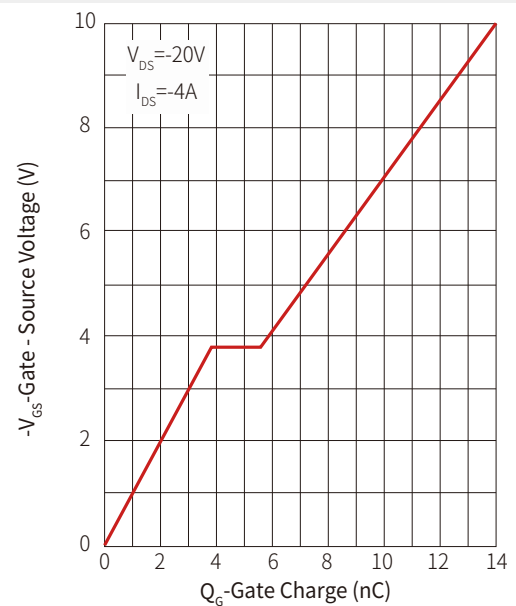
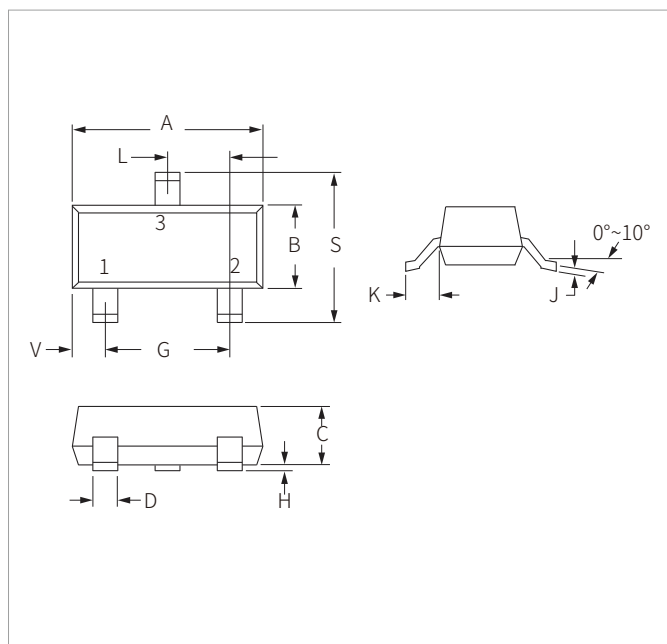


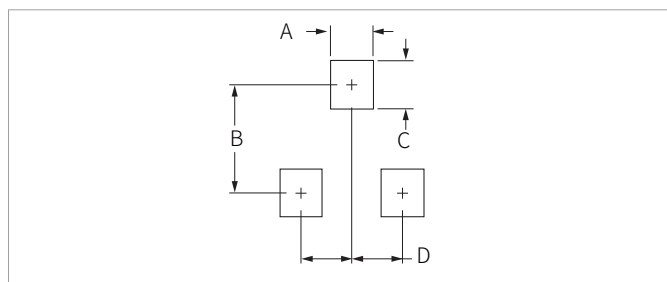
Figure 9: Drain-Source On Resistance

Figure 10: Source-Drain Diode Forward

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
SPM05P04S	SOT-23	3000PCS	7"

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