

FEATURES

- | Low $R_{DS(ON)}$ to minimize conductive loss
- | High GOX reliability
- | Low Thermal resistance
- | Meet AEC-Q101 Requirements



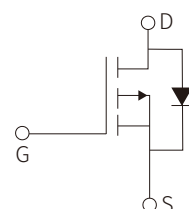
APPLICATION

- | BLDC Motor driver
- | DC-DC
- | Load Switch



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}	-60	V
Gate-Source Voltage		V _{GS}	±20	V
Drain Current - Continuous	T _C =25°C	I _D	-2.0	A
	T _C =75°C		-1.98	A
	T _C =100°C		-1.59	A
Pulsed Drain Current Pulsed; tp ≤ 10 μs; Tmb = 25 °C		I _{DM}	-8	A
Total Power Dissipation	T _C =25°C	P _D	2	W
	T _A =25°C		0.7	W
Single Pulse Avalanche Energy L=0.1mH, V _{GS} =-10V, Rg=25Ω,		E _{AS}	1.2	mJ
Single Pulse Avalanche Energy L=0.5mH, V _{GS} =-10V, Rg=25Ω			2.52	mJ
Thermal resistance, junction - case		R _{thJC}	80	°C/W
Thermal resistance, junction-ambient ^①		R _{thJA}	180	°C/W
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55 to 150	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-60			V
Gate- Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			100	nA
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-60V, V_{GS}=0V$			1.0	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.3	-1.8	-2.5	V
Forward Transconductance	g_{FS}	$V_{DS}=-5V, I_{SD}=-1A$		20		S
Static Drain-source On Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-1A$		73	92	m Ω
		$V_{GS}=-4.5V, I_D=-1A$		95	125	m Ω
Diode Forward Voltage	V_{FSD}	$V_{GS}=0V, I_{SD}=-1.5A$			1.3	V
Input Capacitance	C_{iss}	$V_{DS}=-25V, f=1MHz$		650		pF
Output Capacitance	C_{oss}			95		pF
Reverse Transfer Capacitance	C_{rss}			70		pF
Gate resistance	R_g	$f=1.0MHz$		8		Ω
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=-15V, R_g=3.3\Omega$ $V_{GS}=-10V, I_D=-1A$		6.5		ns
Turn-on Rise Time	t_r			8		ns
Turn-Off Delay Time	$t_{d(off)}$			16.5		ns
Turn-off Fall Time	t_f			4		ns
Total Gate Charge	Q_g	$V_{DD}=-15V, I_D=-1A$ $V_{GS}=-10V$		12		nC
	$Q_{g(-4.5V)}$			21		nC
Gate-Source Charge	Q_{gs}			1.6		nC
Gate-Drain Charge	Q_{gd}			2.6		nC

Note:

① Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate;

② Practically the current will be limited by PCB, thermal design and operating temperature. $V_{GS}=-10V$.

PARAMETER CHARACTERISTIC CURVE

Figure 1: Gate-Charge Characteristics

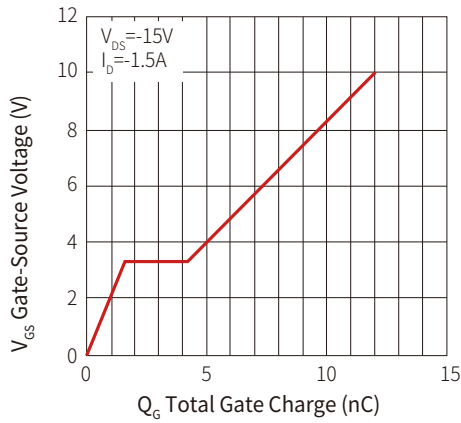


Figure 2: Capacitance Characteristics

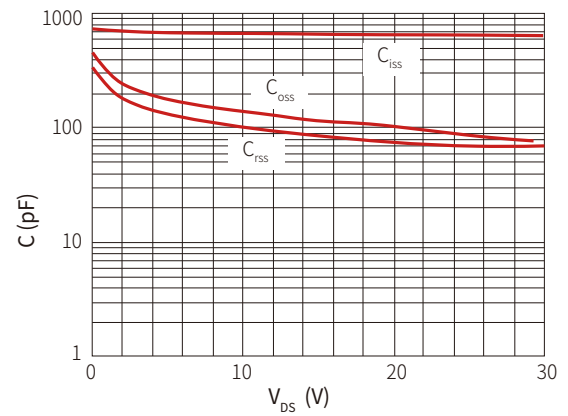


Figure 3: Power Dissipation

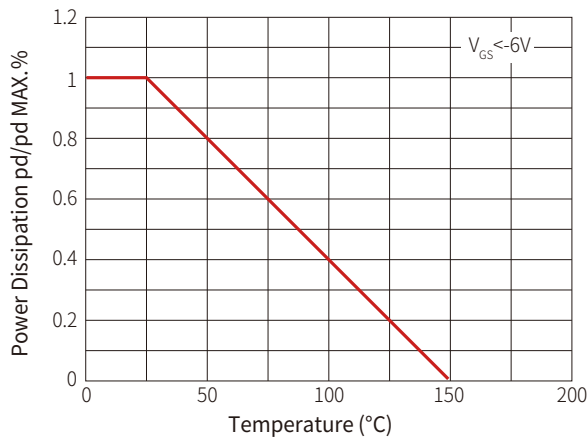


Figure 4: Typical output Characteristics

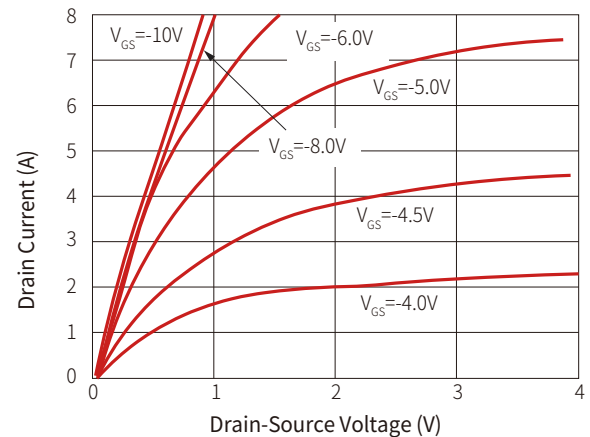


Figure 5: Threshold Voltage V.S Junction Temperature

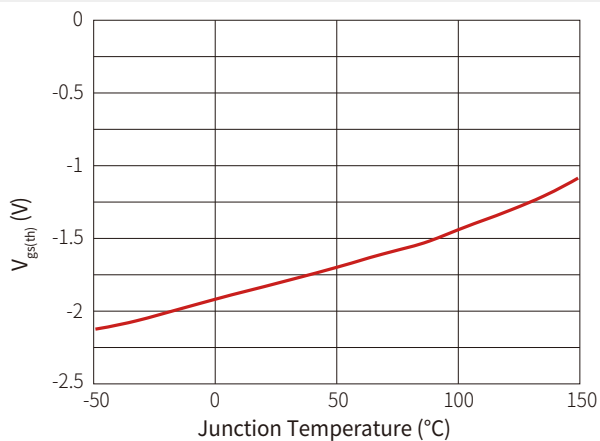


Figure 6: Resistance V.S Drain Current

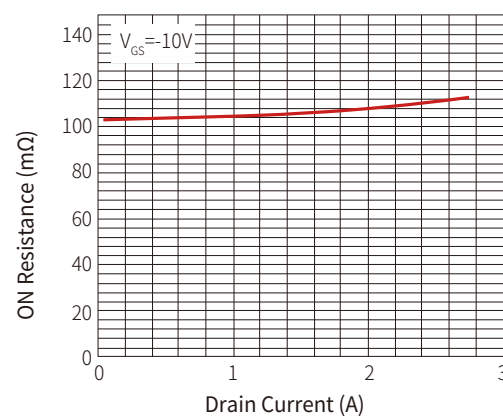
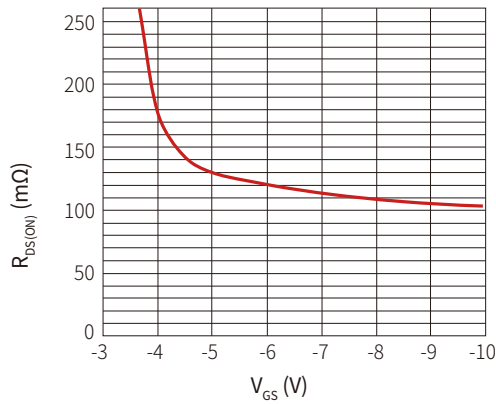
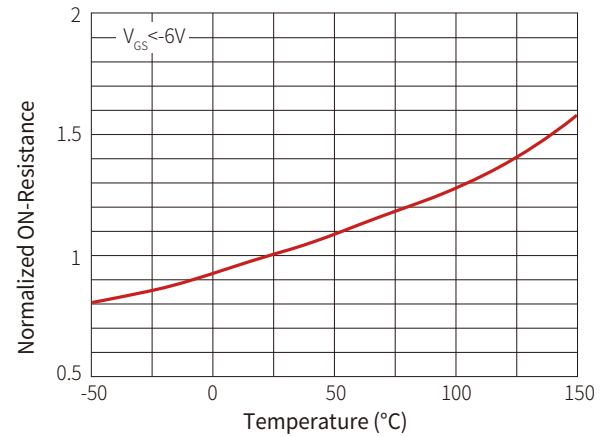
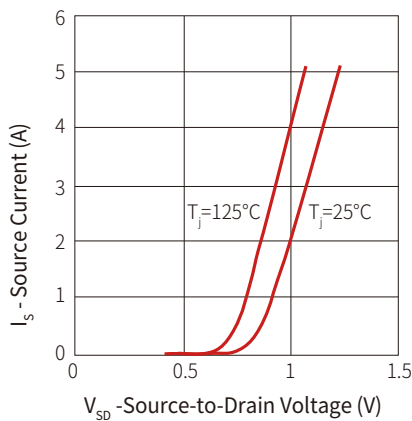
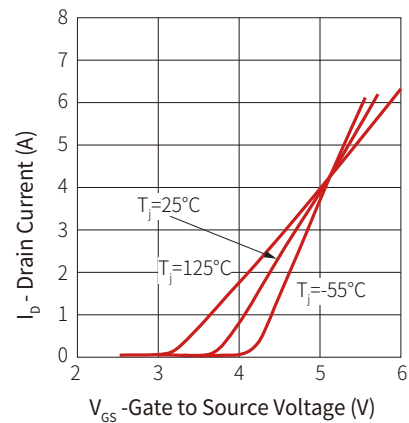
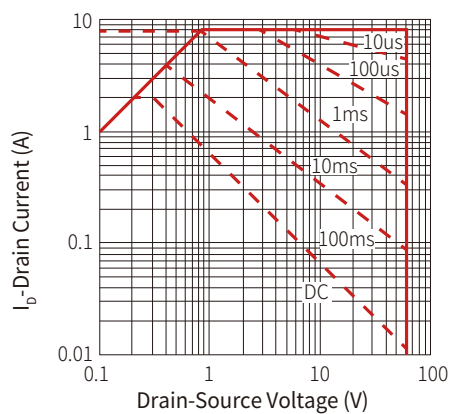
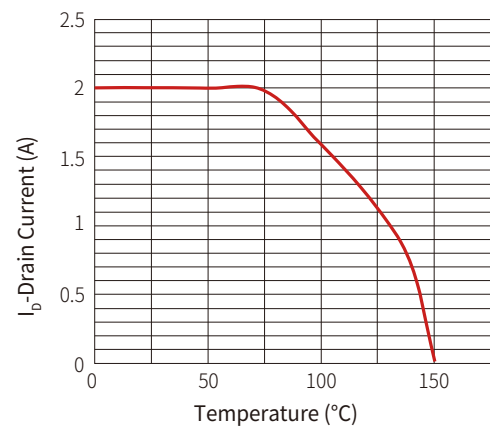
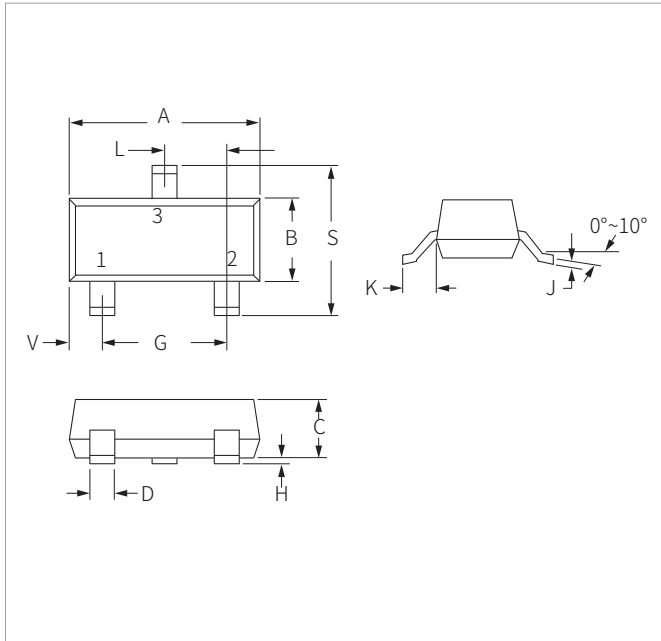


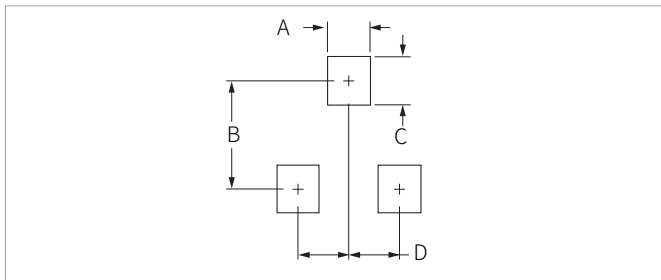
Figure 7: On-Resistance VS Gate Source Voltage

Figure 8: On-Resistance V.S Junction Temperature

Figure 9: Diode Forward Voltage vs. Current

Figure 10: Transfer Characteristics

Figure 11: Safe Operating Area

Figure 12: I_D vs. Case Temperature^②


SOT-23-3L PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.15	0.110	0.124
B	1.50	1.70	0.060	0.070
C	1.00	1.30	0.039	0.051
D	0.37	0.50	0.015	0.020
G	1.78	2.10	0.070	0.083
H	0.01	0.15	0.001	0.006
J	0.08	0.18	0.003	0.007
K	0.35	0.69	0.014	0.029
L	0.89	1.02	0.035	0.040
S	2.60	3.00	0.102	0.118
V	0.45	0.60	0.018	0.024

RECOMMENDED PAD LAYOUT DIMENSIONS



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.70	1.00	0.028	0.039
B	2.30	2.50	0.090	0.098
C	0.70	1.00	0.028	0.039
D	0.80	1.10	0.032	0.043

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SPM8271Q	SOT-23-3L	3000PCS	7"

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