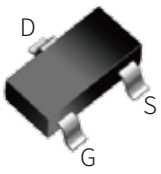
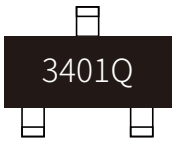
FEATURES

- V_{DS} = -30V, I_D = -4.4A
- $R_{DS(ON)}$ <47 mΩ @V_{GS}=-10V
- $R_{DS(ON)}$ <55mΩ @V_{GS}=-4.5V
- $R_{DS(ON)}$ <83mΩ @V_{GS}=-2.5V
- Trench Power LV MOSFET technology
- High density cell design for low $R_{DS(ON)}$
- High Speed switching
- Meet AEC-Q101 Requirements



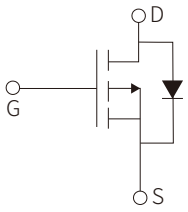
SOT-23



Marking

APPLICATION

- Battery protection
- Load switch
- Power management
- 12V Automotive systems



Schematic Symbol

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}	-30	V
Gate Threshold Voltage	V_{GSS}	±12	V
Drain Current - Continuous (T_A=25°C)	I_D	-4.4	A
Drain Current - Continuous(T_A=125°C)		-1.9	
Pulsed Drain Current [A]	I_{DM}	-27	A
Power Dissipation (T_A=25°C)	P_D	1.2	W
Power Dissipation (T_A=125°C)		0.2	
Thermal Resistance Junction- to- Ambient [B]	$R_{\theta JA}$	104	°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
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=-250μA	-30			V
Gate-source leakage current	I_{GSS}	V_{GS}=±12V,V_{DS}=0V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V,V_{GS}=0V			-1	μA
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-0.6	-0.95	-1.4	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS}=-10V,I_D=-2A		37	47	mΩ
		V_{GS}=-4.5V,I_D=-1.5A		44	55	mΩ
		V_{GS}=-2.5V,I_D=-1A		66	83	mΩ
Diode Forward Voltage	V_{SD}	I_S=-4.4A,V_{GS}=0V			-1.2	V
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=-15V,V_{GS}=0V,f=1MHz		1040		pF
Output Capacitance	C_{oss}			80		pF
Reverse Transfer Capacitance	C_{rss}			68		pF
Turn–on Delay Time	$t_{d(on)}$	V_{DS}=-15V V_{GS}=-10V,R_{GEN}=3Ω I_D=-4.4A		5.0		ns
Turn–on Rise Time	t_r			30		ns
Turn–Off Delay Time	$t_{d(off)}$			29		ns
Turn–off Fall Time	t_f			48		ns
Total Gate Charge	Q_g	V_{DS}=-15V,I_D=-4.4A V_{GS}=-10V		18		nC
Gate-Source Charge	Q_{gs}			2.85		nC
Gate-Drain Charge	Q_{gd}			1.5		nC

A. Repetitive rating; pulse width limited by max. junction temperature.
B. The value of $R_{\theta JA}$ is measured with the device mounted on the minimum recommend pad size, in the still air environment with T_A =25°C. The maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design

PARAMETER CHARACTERISTIC CURVE

Fig 1: Output Characteristics

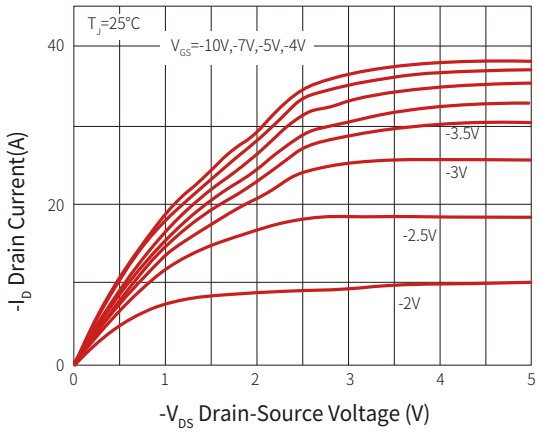


Figure 2: Transfer Characteristics

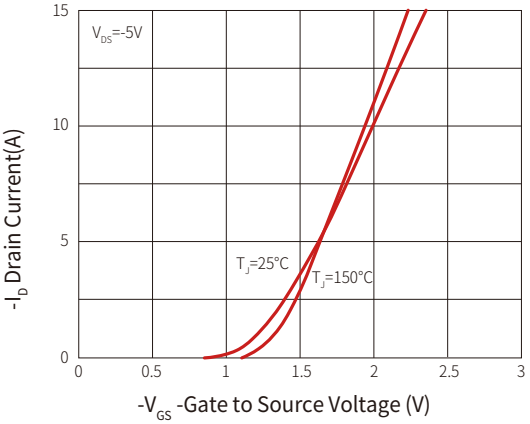


Figure 3: Capacitance Characteristics

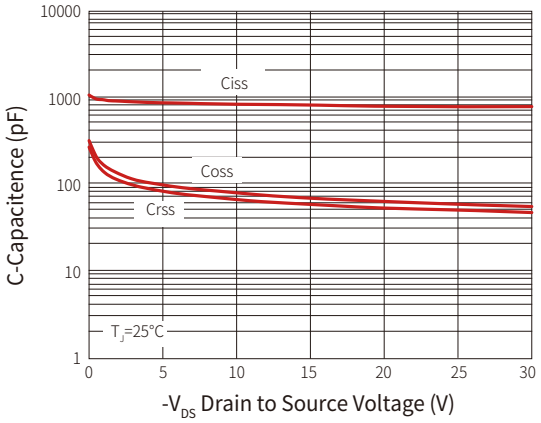


Figure 4: Gate Charge

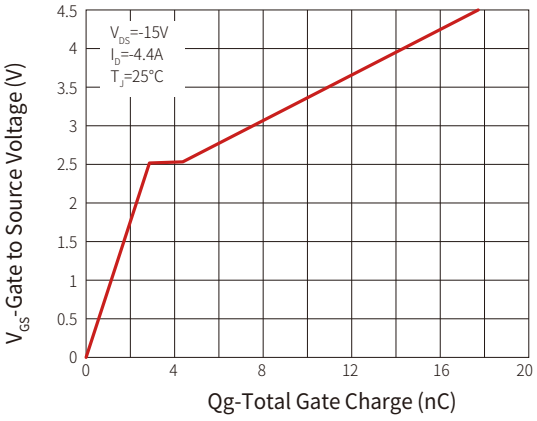


Figure 5: On-Resistance vs Gate to Source Voltage

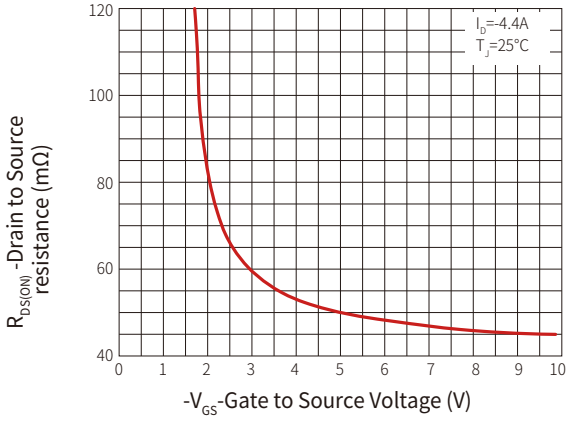


Figure 6: Normalized On-Resistance

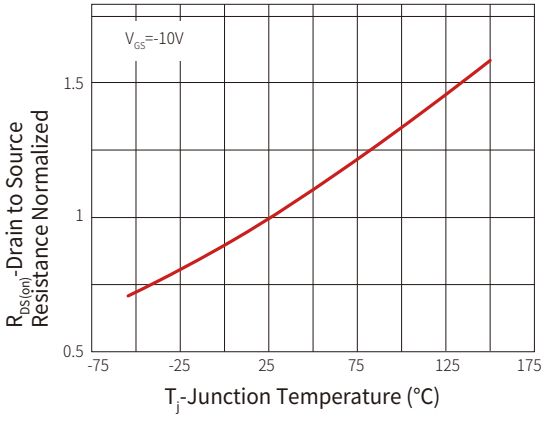


Figure 7: $R_{DS(on)}$ VS Drain Current

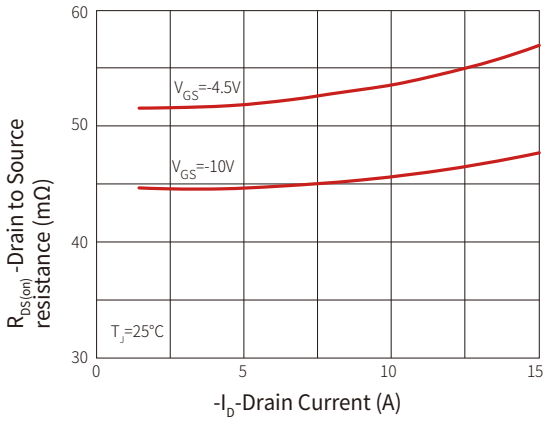


Figure 8: Forward Characteristics Of Reverse Diode

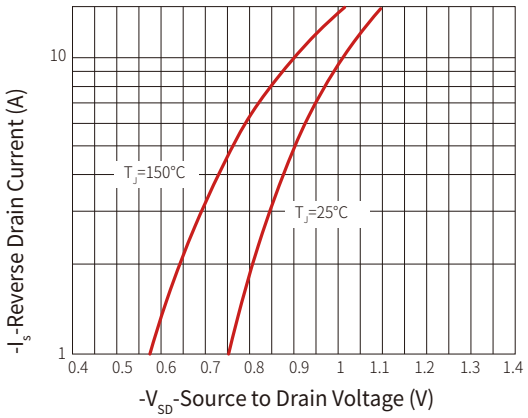


Figure 9: Normalized Threshold voltage

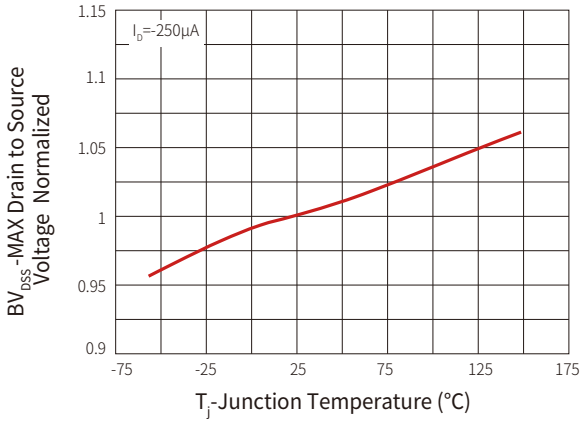


Figure 10: Normalized Threshold voltage

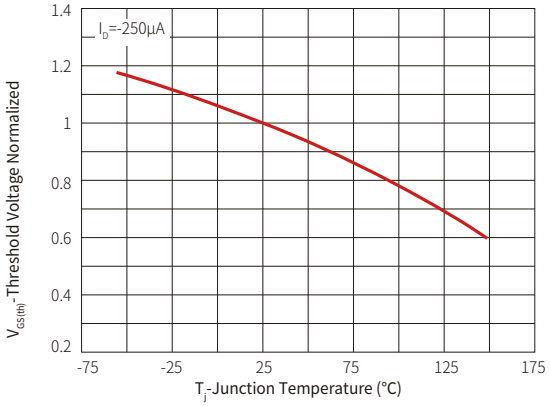


Figure 11: Maximum Transient Thermal Impedance

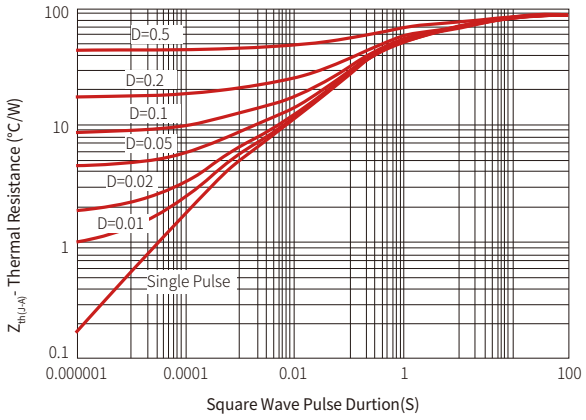
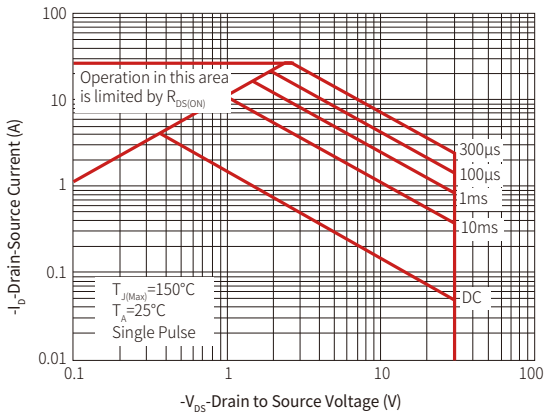
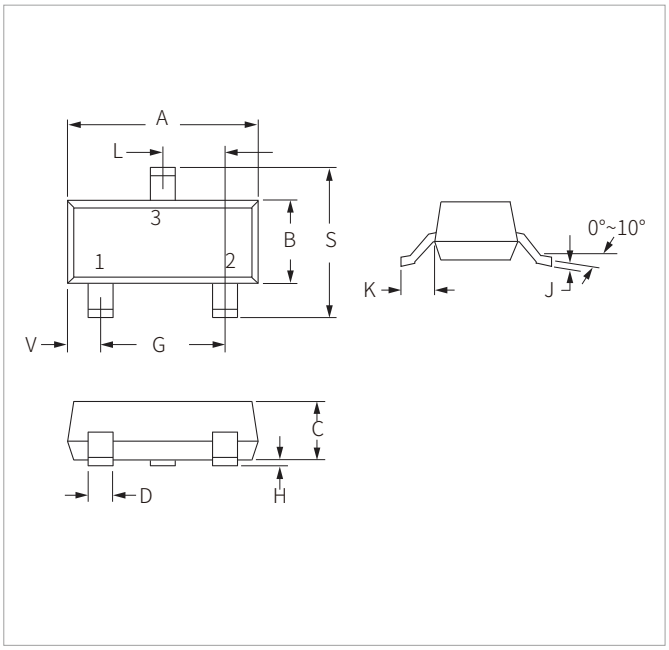


Figure 12: Safe Operation Area

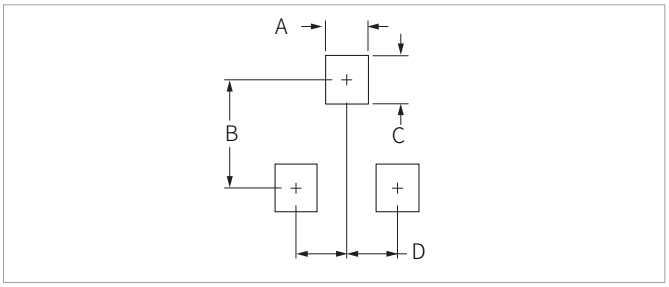


SOT-23 PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.80	3.05	0.110	0.120
B	1.20	1.60	0.047	0.063
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
SPM3401SQ	SOT-23	3000PCS	7”

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