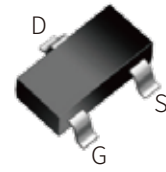


FEATURES

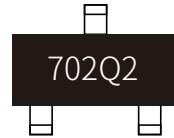
- | Sensitive gate trigger current and Low Holding current
- | ESD protected up to 2KV
- | Meet AEC-Q101 Requirements



SOT-23

APPLICATION

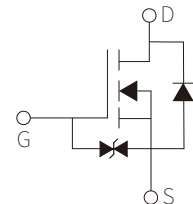
- | Intended For Use In General Purpose Switching And Phase Control Applications, Meet The Stringent Requirements Of Automotive Applications



Marking

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_{DSS}	60	V
Drain-Gate Voltage	V_{DGR}	60	V
Gate-Source Voltage - Continuous	V_{GSS}	±20	V
Drain Current - Continuous ($T_a=25^\circ\text{C}$)	I_D	300	mA
Drain Current - Continuous ($T_a=85^\circ\text{C}$)		210	
Drain Current - Pulsed(Note 1)	I_{DM}	1200	mA
Power Dissipation	P_D	350	mW
Maximum Junction-to-Ambient(Note 2)	$R_{\theta JA(\text{Steady State})}$	300	$^\circ\text{C}/\text{W}$
	$R_{\theta JA(t \leq 5s)}$	92	
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

Note 1) Pulse Width 10us, Duty Cycle 1%

Note 2) Surface—mounted on FR4 board using 1 sq in pad size with 1 oz Cu

ELECTRICAL CHARACTERISTICS (Ta=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	V_{DSS}	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate-Source Leakage	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$			1.0	μA
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=250mA$			1.5	V
Drain-Source Diode Forward Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.6	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=0.5A$			2.3	Ω
		$V_{GS}=5V, I_D=0.05A$		1.7	2.7	Ω
Forward Transconductance	Y_{fs}	$V_{DS}=10V, I_D=0.2A$	80			mS
Input Capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V, f=1MHz$		25	50	pF
Output Capacitance	C_{oss}			11	25	pF
Reverse Transfer Capacitance	C_{rss}			2.5	5	pF
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=10V, I_D=500mA$ $V_{DD}=25V, R_G=25\Omega$		12.2		ns
Turn-on Rise Time	t_r			9.0		ns
Turn-Off Delay Time	$t_{d(off)}$			55.8		ns
Turn-off Fall Time	t_f			29		ns
Total Gate Charge	$Q_{g(tot)}$	$V_{DS}=10V, I_D=200mA$ $V_{GS}=4.5V$		0.7		nC
Threshold Gate Charge	$Q_{g(th)}$			0.1		nC
Gate-Source Charge	Q_{gs}			0.3		nC
Gate-Drain Charge	Q_{gd}			0.1		nC

PARAMETER CHARACTERISTIC CURVE

Figure1: On-Region Characteristics

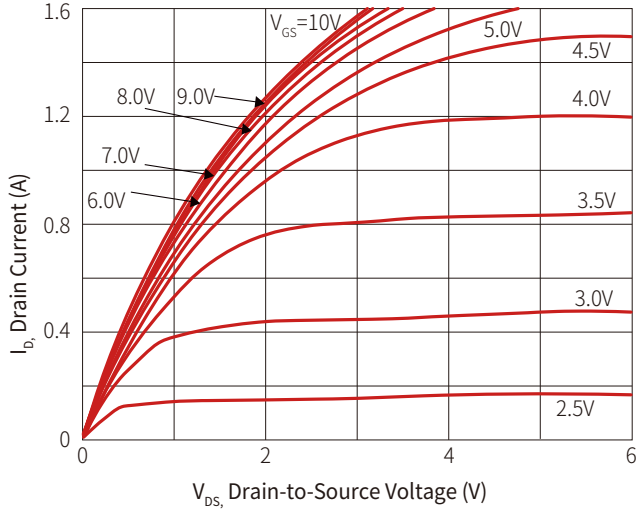


Figure2: Transfer Characteristics

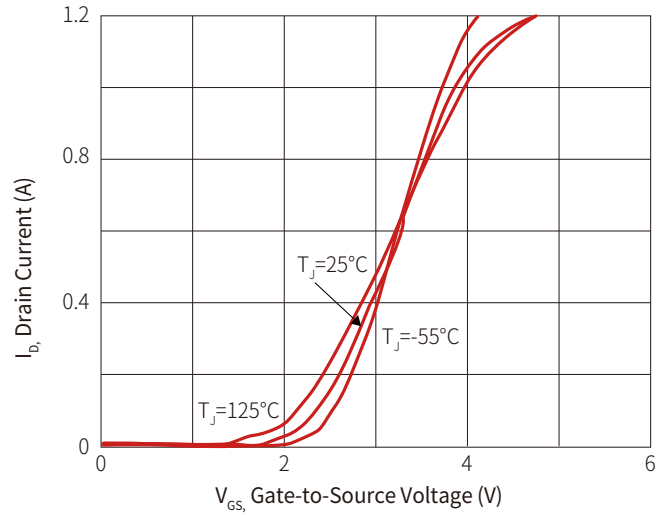


Figure3: On-Resistance vs. Drain Current Temperature

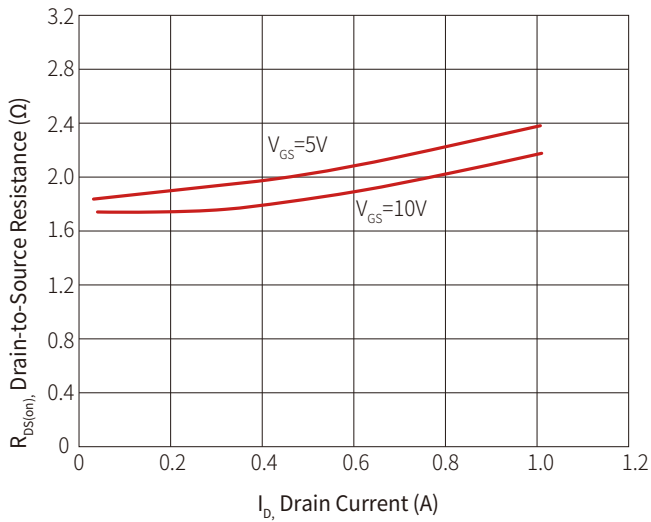


Figure 4: On-Resistance Variation With Temperature

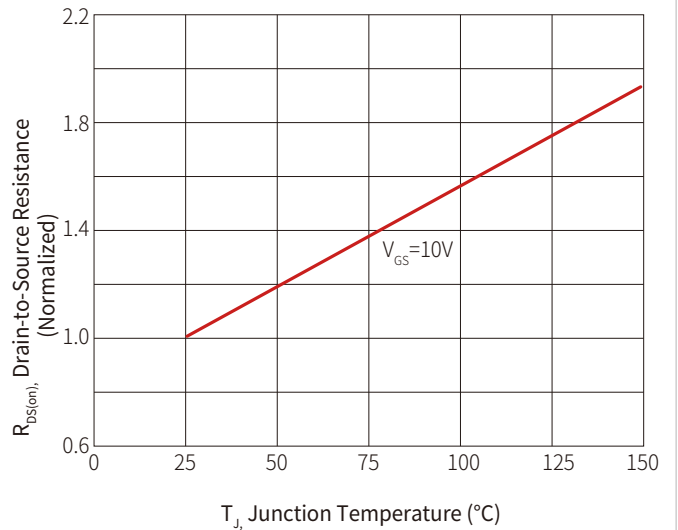


Figure 5: On-Resistance vs. Gate-to-Source Voltage

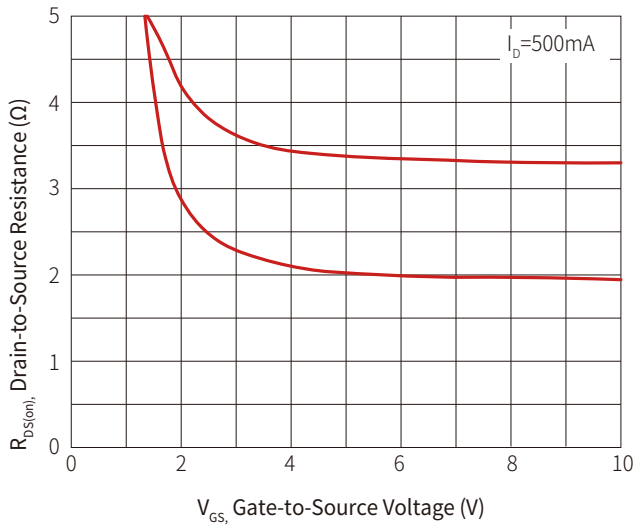


Figure 6: Diode Forward Voltage vs. Current

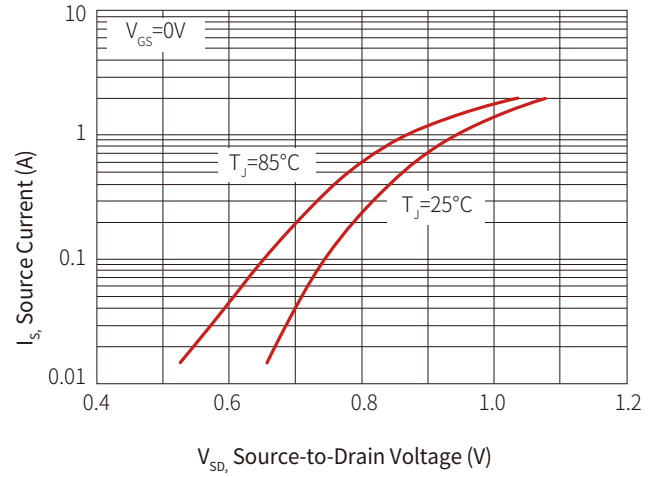


Figure 7: Gate-to-Source and Drain-to-Source Voltage vs. Total Charge

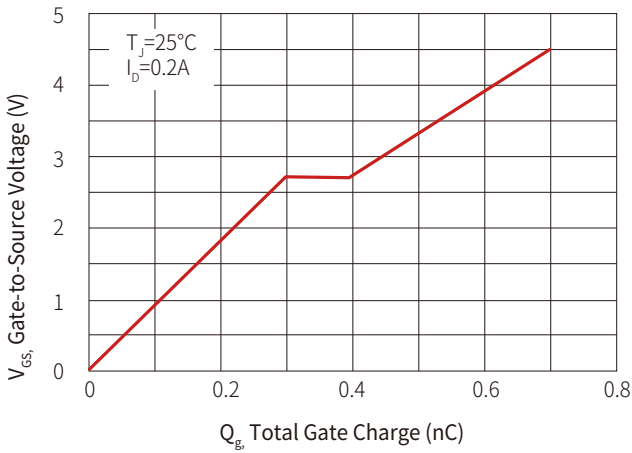


Figure 8: Capacitance Variation

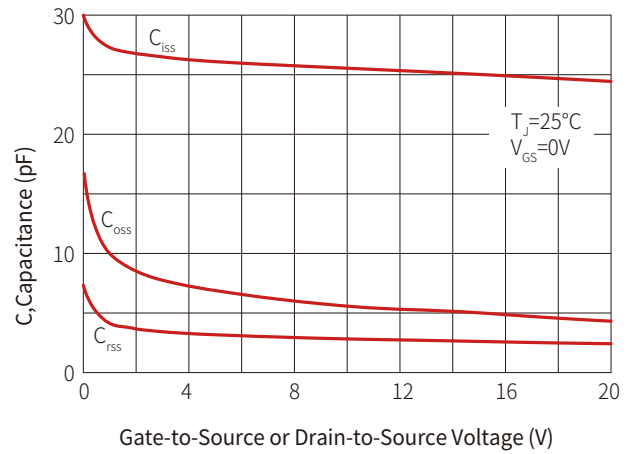


Figure 9: Safe Operating Area

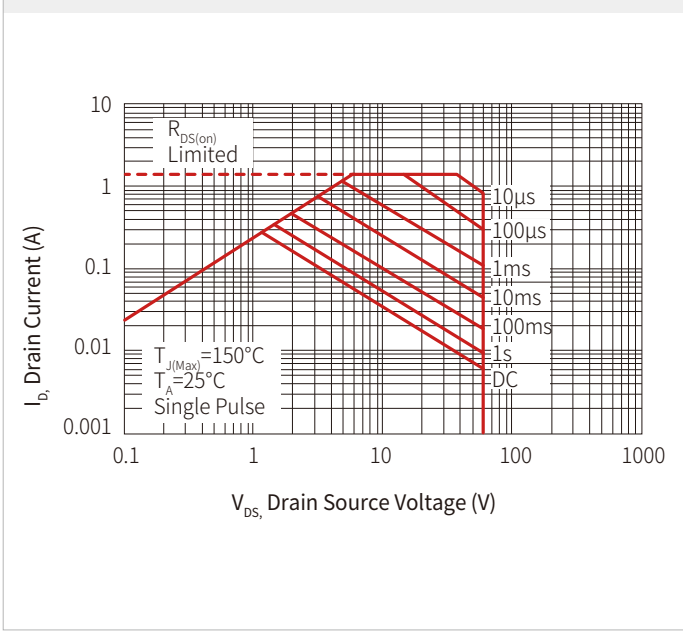


Figure 10: Breakdown Voltage vs. Temperature

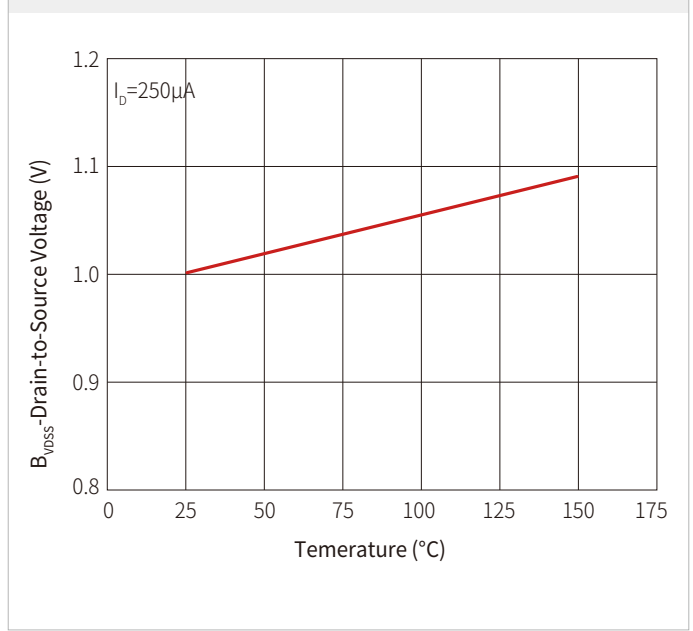


Figure 11: Gate-Source Threshold Voltage vs Temperature

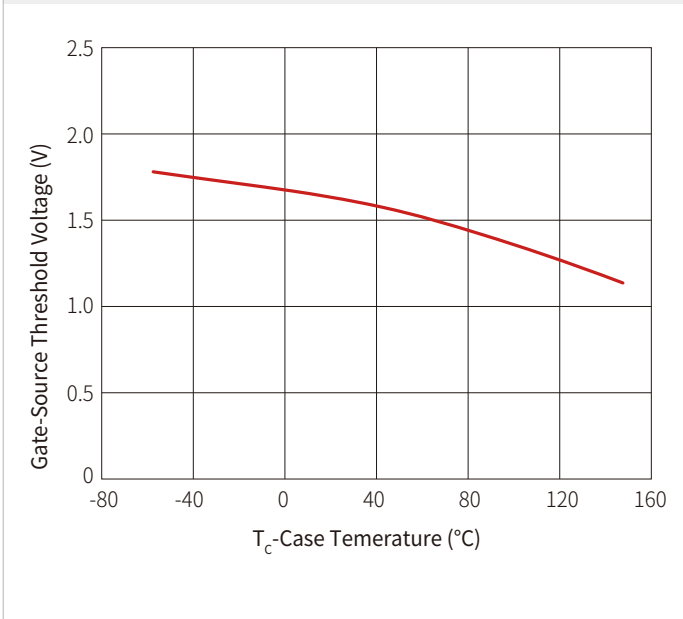
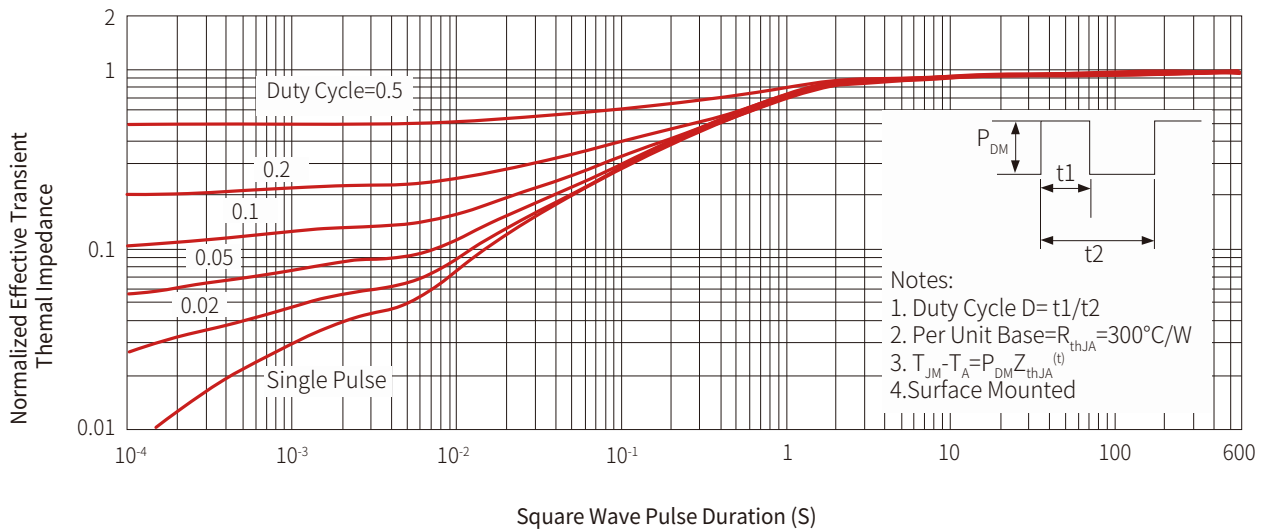
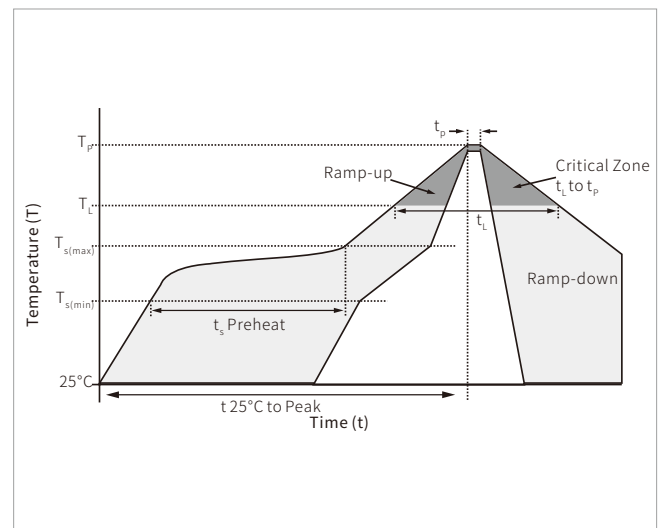


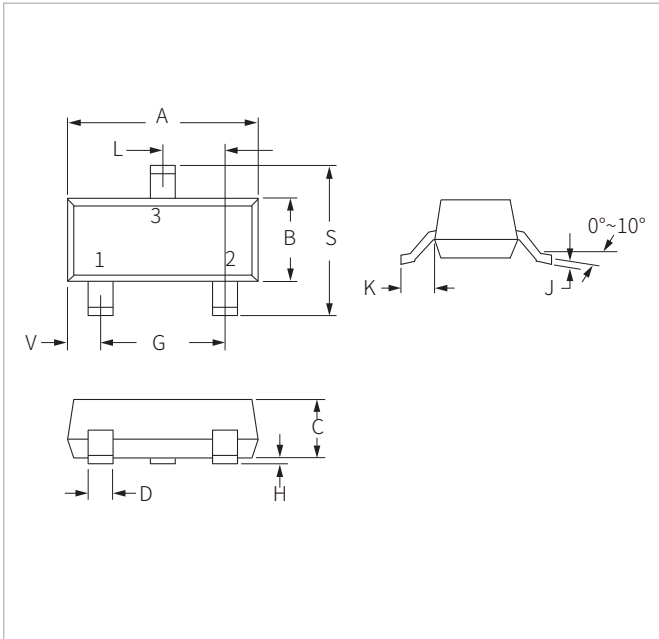
Figure 11: Normalized Thermal Transient Impedance Junction-to-Ambient


SOLDERING PARAMETERS

Reflow Condition		Lead-free assembly
Pre Heat	Temperature Max ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak)		3°C/second max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Time (min to max) (t_L)	60 – 150 seconds
Peak Temperature (T_p)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes max.
Do not exceed		260°C

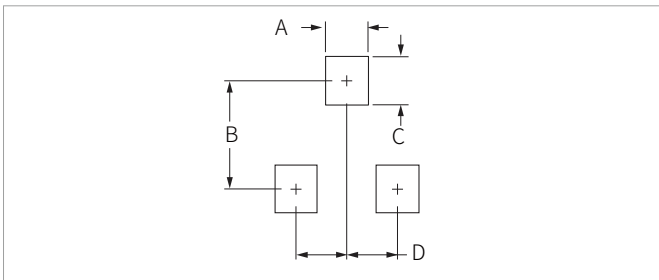


SOT-23 PACKAGE INFORMATION



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
SNM23T03N06EQ	SOT-23	3000PCS	7"

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