

Description

This 60V 300mA N-Channel MOSFET in a SOT-23 Plastic Package.

Features

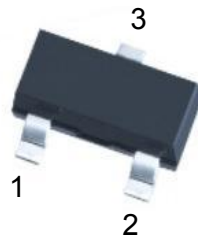
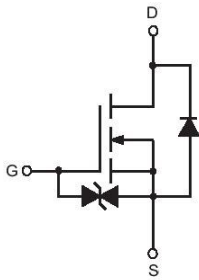
- Sensitive gate trigger current and Low Holding current.
- ESD protected up to 2KV,
- Qualified to AEC-Q101 Standards for High Reliability
- Halogen-Free Product.

Applications

- Intended for use in general purpose switching and phase control applications
- Meet the stringent requirements of automotive applications..

V_{DSS}	$R_{DS(on)}$ Typ	I_D
60V	1.7Ω	300mA

Equivalent Circuit & Pinning



PIN1 : Gate

PIN 2 : Source

PIN 3 : Drain

Absolute Maximum Ratings(Ta=25°C)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V _{DSS}	60	V
Drain-Gate Voltage	V _{DGR}	60	V
Drain Current - Continuous	I _{D (Ta=25°C)}	300	mA
	I _{D (Ta=85°C)}	210	
Drain Current - Pulsed(Note 1)	I _{DM}	1200	mA
Gate-Source Voltage - Continuous	V _{GSS}	±20	V
Power Dissipation	P _D	350	mW
Junction Temperature Range	T _j	150	°C
Storage Temperature Range	T _{stg}	-55~150	°C
Maximum Junction-to-Ambient(Note 2)	R _{θJA(Steady State)}	300	°C/W
	R _{θJA(t≤5s)}	92	

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} =0	I _D =250μA	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{GS} =0	V _{DS} =60V			1.0	μA
Gate-Source Leakage current	I _{GSS}	V _{DS} =0V	V _{GS} =±20V			±10	μA
Static Drain-Source On-Resistance	R _{DS(on)(1)}	V _{GS} =10V	I _D =0.5A			2.3	Ω
	R _{DS(on)(2)}	V _{GS} =5V	I _D =0.05A		1.7	2.7	
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V	I _S =250mA			1.5	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS}	I _D =250uA	1.0	1.6	2.5	V
Forward Transconductance	Y _{fs}	V _{DS} =10V	I _D =0.2A	80			mS
Input Capacitance	C _{iss}	V _{GS} =0V, f=1MHz, V _{DS} =20V			25	50	pF
Output Capacitance	C _{oss}				11	25	
Reverse Transfer Capacitance	C _{rss}				2.5	5	
Total Gate Charge	Q _{G(TOT)}	V _{GS} =4.5V, V _{DS} =10V; I _D =200 mA			0.7		nC
Threshold Gate Charge	Q _{G(TH)}				0.1		
Gate-to-Source Charge	Q _{GS}				0.3		
Gate-to-Drain Charge	Q _{GD}				0.1		

Electrical Characteristics(Ta=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Turn-On Delay Time	$t_{d(ON)}$	VGS =10V, VDD=25V, ID=500mA, RG=25 Ω		12.2		ns
Rise Time	t_r			9.0		
Turn-Off Delay Time	$t_{d(OFF)}$			55.8		
Fall Time	t_f			29		

Electrical Characteristic Curve

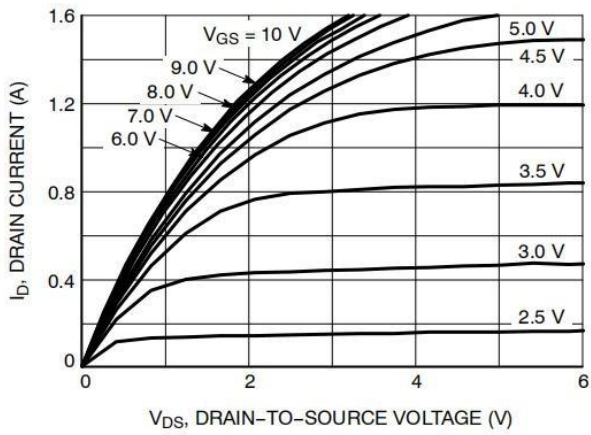


Figure 1. On-Region Characteristics

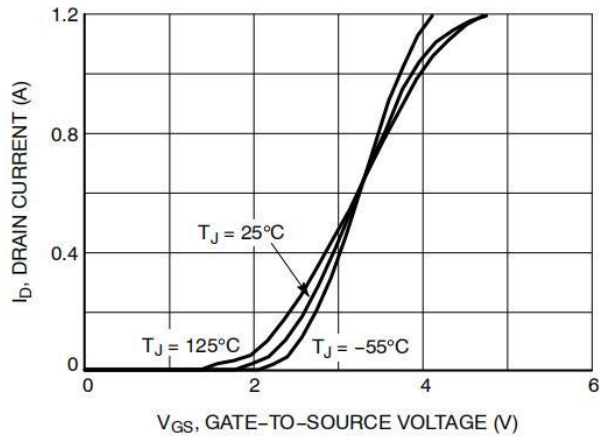


Figure 2. Transfer Characteristics

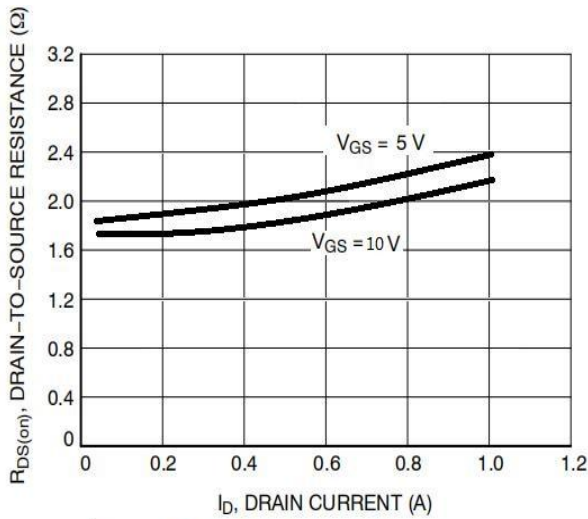


Figure 3. On-Resistance vs. Drain Current and Temperature

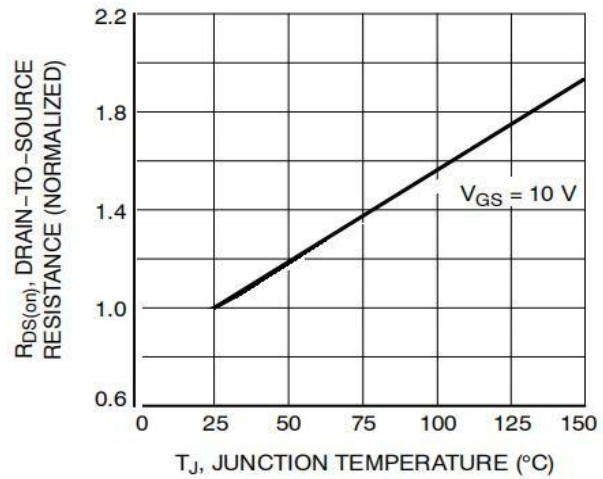


Figure 4. On-Resistance Variation with Temperature

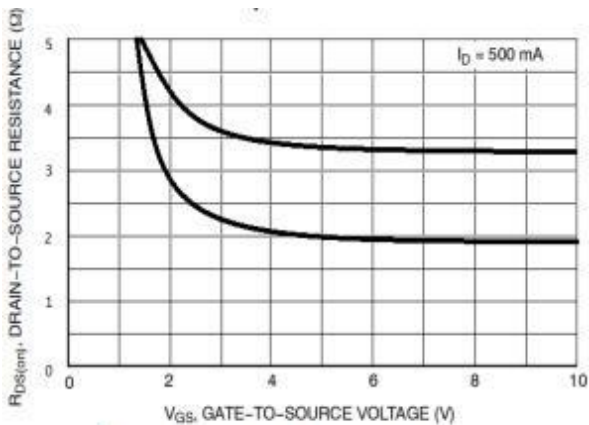


Figure 5. On-Resistance vs. Gate-to-Source Voltage

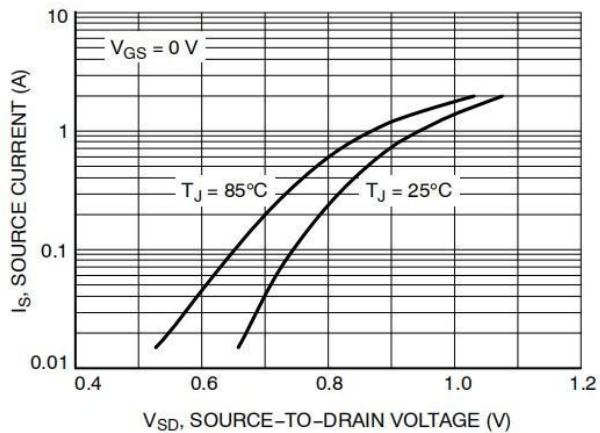


Figure 6. Diode Forward Voltage vs. Current

Electrical Characteristic Curve

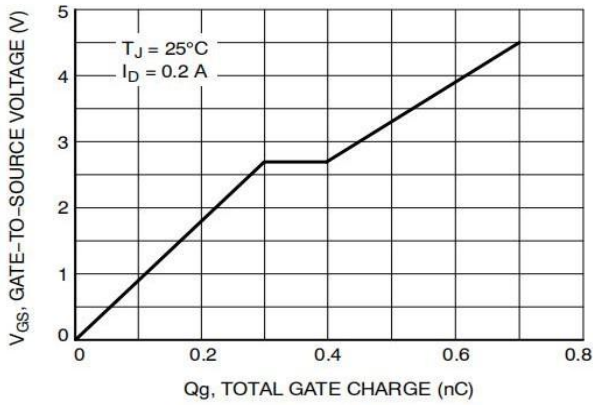


Figure 7 . Gate-to-Source and Drain-to-Source Voltage vs. Total Charge

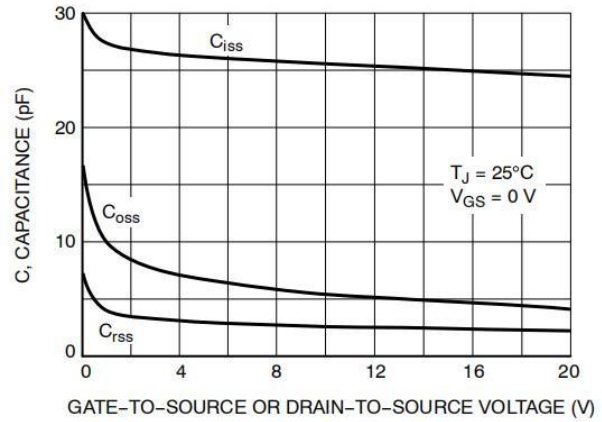


Figure 8. Capacitance Variation

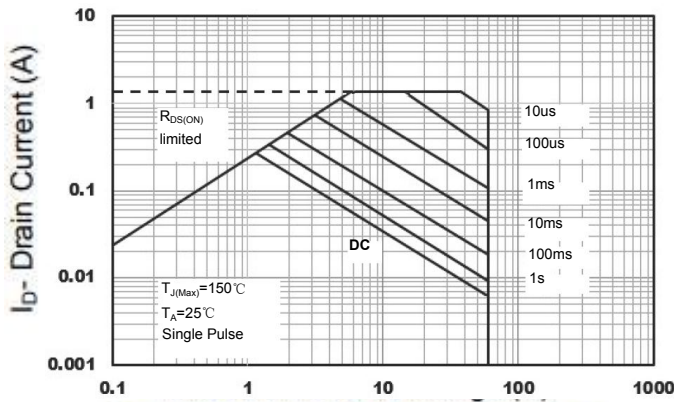


Figure 9 : Safe Operation Area

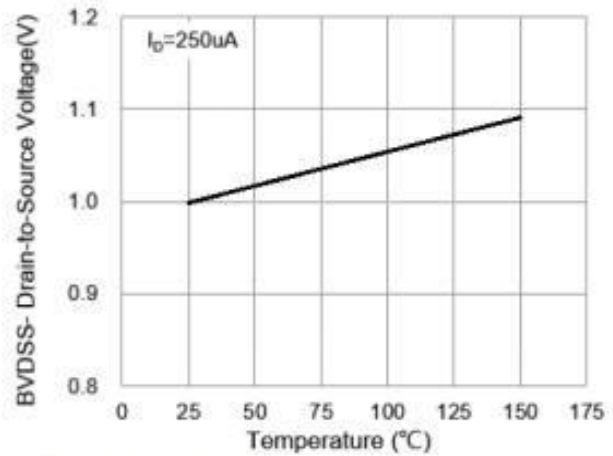


Figure 10 : Breakdown Voltage vs. Temperature

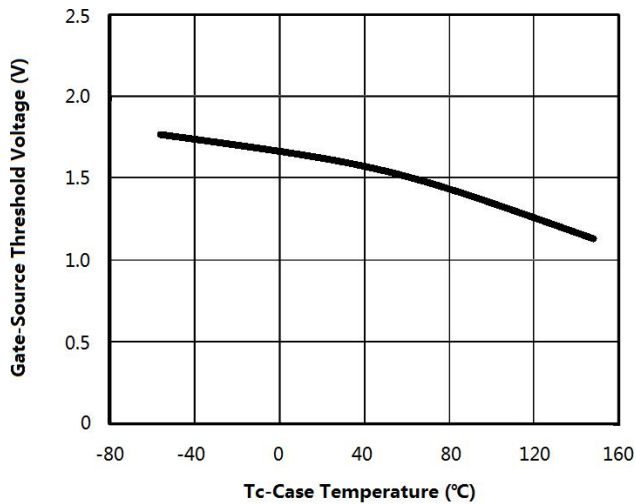


Figure 11 : Gate-Source Threshold Voltage vs Temperature

Electrical Characteristic Curve

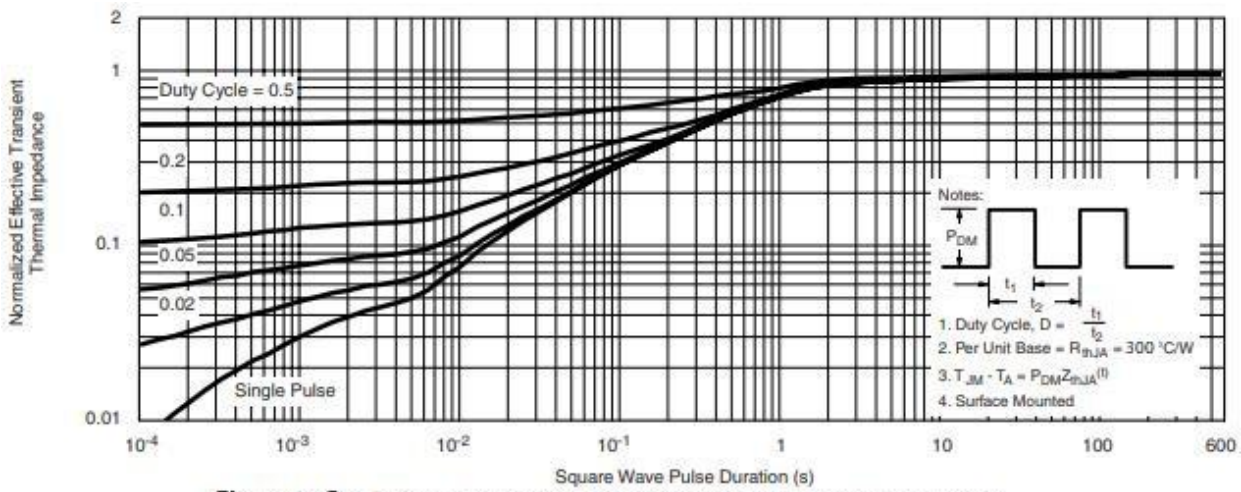
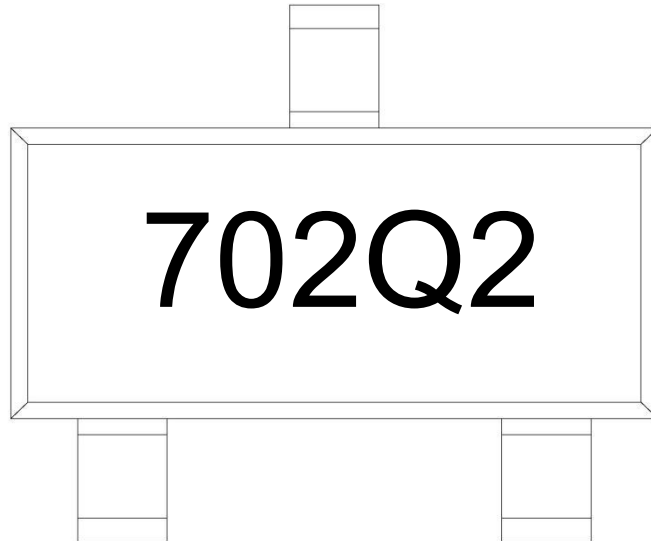


Figure 12 : Normalized Thermal Transient Impedance, Junction-to-Ambient

Marking Instructions



Note:

702Q2 : Product Type

Above Q: Automobile halogen-free product Code

Packaging SPEC.

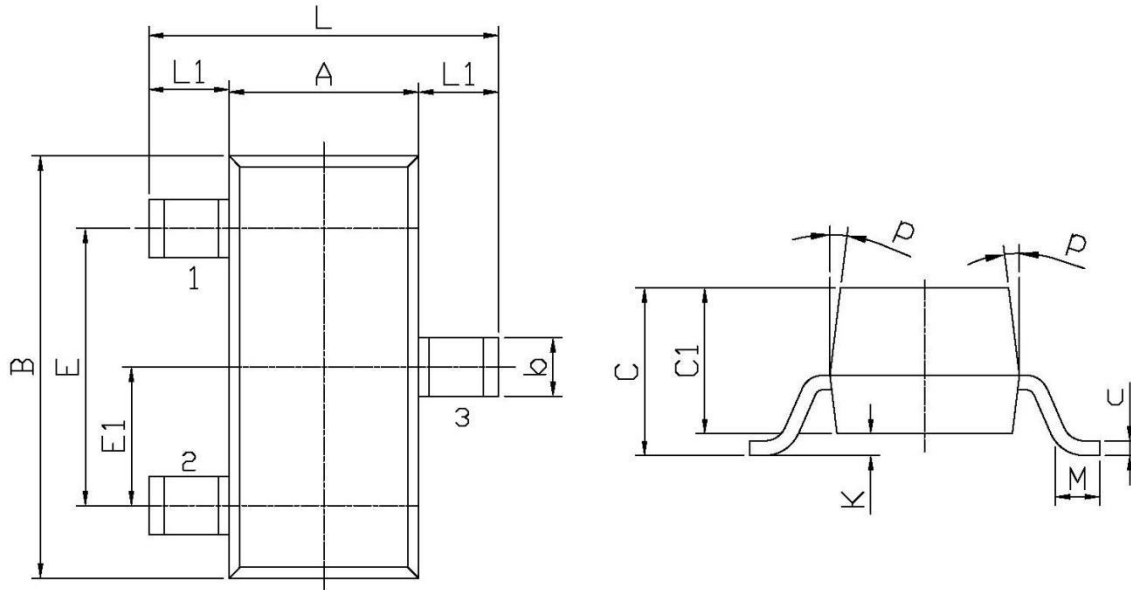
REEL INFORMATION

Package Type	Units					Dimension (unit: mm ³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
SOT-23	3,000	10	30,000	6	180,000	7" x8	180×120×180	390×385×205

Package Outline Dimensions

SOT-23

单位: mm



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
L	2.2	2.7	C	1.30Max	
L1	0.45	0.65	C1	0.90	1.20
A	1.15	1.50	c	0.05	0.20
B	2.70	3.10	K	0	0.10
E	1.70	2.10	M	0.20MIN	
E1	0.85	1.05	P	7°	
b	0.35	0.55			