

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	80mΩ@10V	3A
	95mΩ@4.5V	

Feature

- High power and current handling capability
- Lead free product is acquired
- Trench Power LV MOSFET technology
- High Speed switching
- Suffix"-Q1" for AEC-Q101

Application

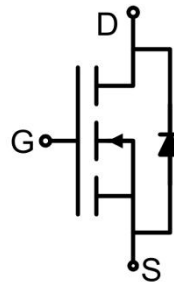
- Power switching application
- Uninterruptible power supply
- PWM application

Package

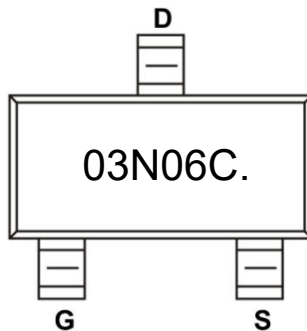


SOT-23

Circuit diagram



Marking



Absolute maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	60	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current	I _D	3	A
Pulsed Drain Current	I _{DM}	20	A
Power Dissipation	P _D	1.2	W
Thermal Resistance from Junction to Ambient	R _{θJA}	105	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_J=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 60V, V _{GS} = 0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.9		2	V
Drain-source on-resistance ¹⁾	R _{DS(on)}	V _{GS} = 10V, I _D = 3A			80	mΩ
		V _{GS} = 4.5V, I _D = 2A			95	
Dynamic characteristics²⁾						
Input Capacitance	C _{iss}	V _{DS} = 30V, V _{GS} = 0V, f = 1MHz		400		pF
Output Capacitance	C _{oss}			28		
Reverse Transfer Capacitance	C _{rss}			23		
Total Gate Charge	Q _g	V _{DS} = 30V, V _{GS} = 10V, I _D = 3A		8.8		nC
Gate-Source Charge	Q _{gs}			1		
Gate-Drain Charge	Q _{gd}			2.5		
Turn-on delay time	t _{d(on)}	V _{DD} = 30V, V _{GS} = 10V I _D = 3A, R _{GEN} = 2.3Ω		4.5		nS
Turn-on rise time	t _r			10		
Turn-off delay time	t _{d(off)}			12.5		
Turn-off fall time	t _f			1.5		
Source-Drain Diode characteristics						
Diode Forward Current ¹⁾	I _S				3	A
Diode Forward voltage	V _{DS}	V _{GS} = 0V, I _S = 3A			1.2	V

Notes:

- 1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.
- 2) Guaranteed by design, not subject to production testing.

Typical Characteristics

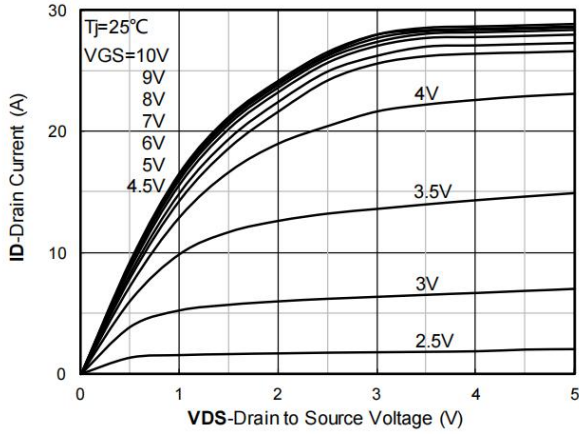


Figure 1. Output Characteristics

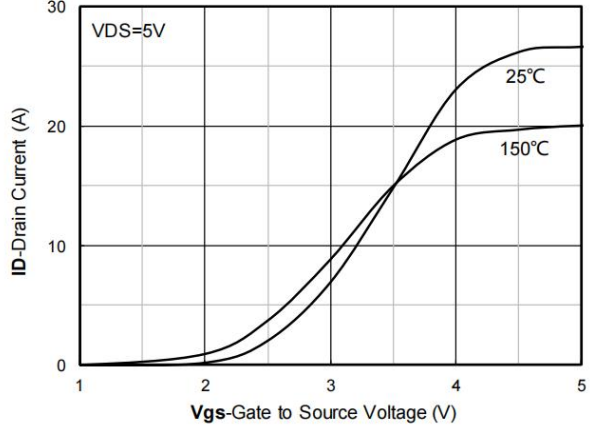


Figure 2. Transfer Characteristics

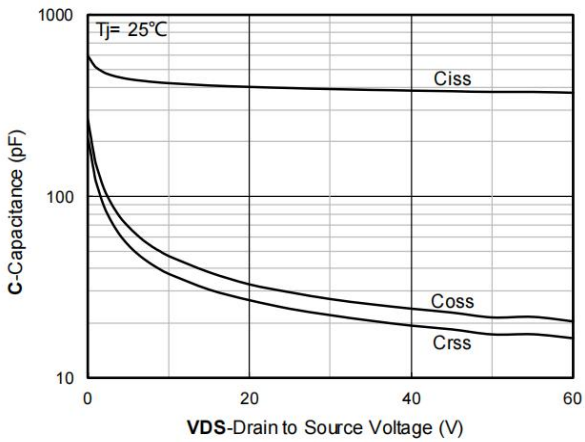


Figure 3. Capacitance Characteristics

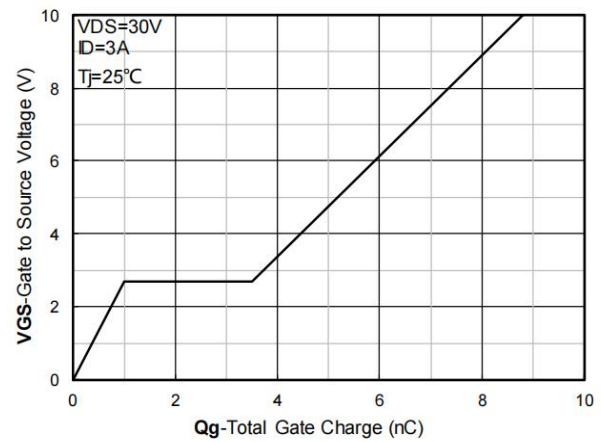


Figure 4. Gate Charge

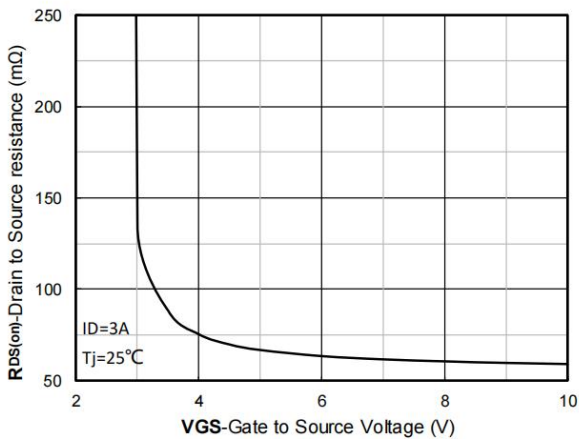


Figure 5. On-Resistance vs Gate to Source Voltage

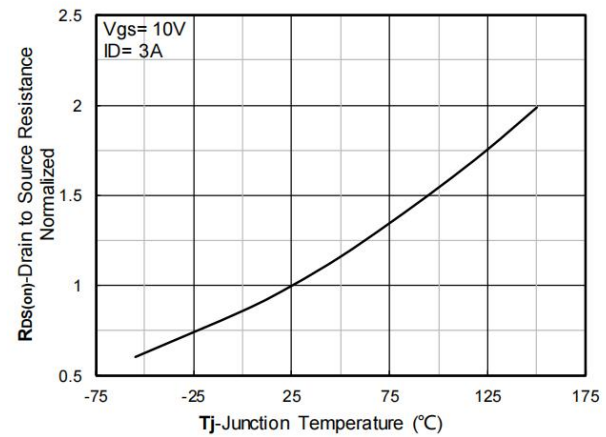


Figure 6. Normalized On-Resistance

Typical Characteristics

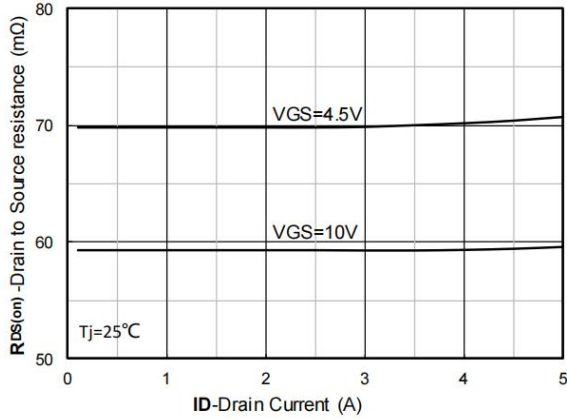


Figure 7. RDS(on) VS Drain Current

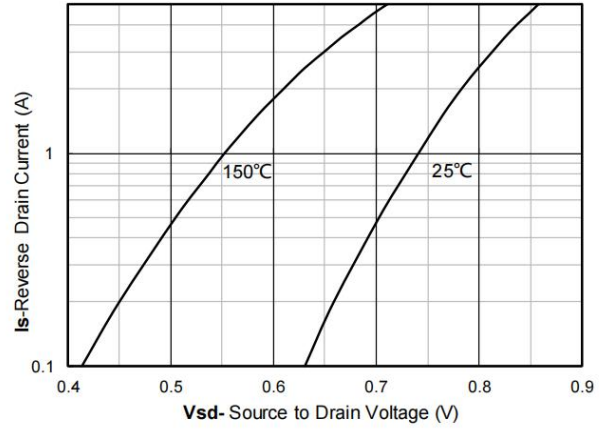


Figure 8. Forward characteristics of reverse diode

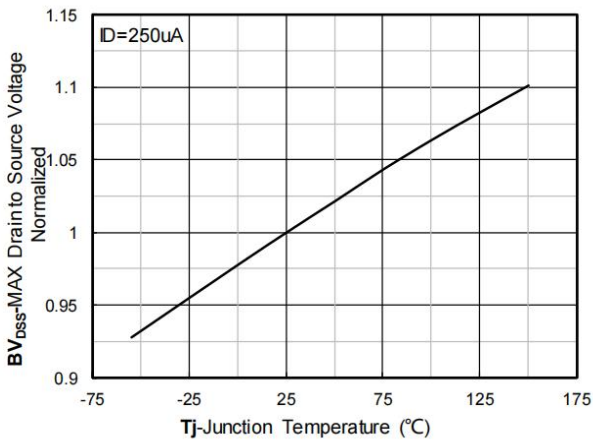


Figure 9. Normalized breakdown voltage

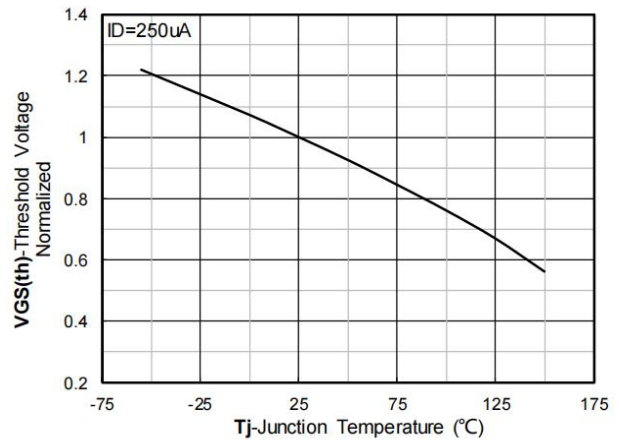


Figure 10. Normalized Threshold voltage

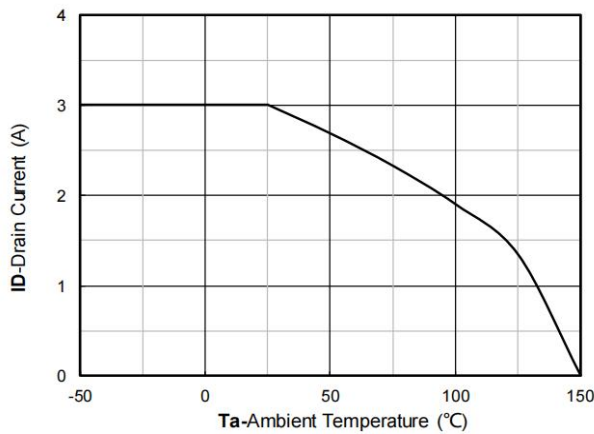


Figure 11. Current dissipation

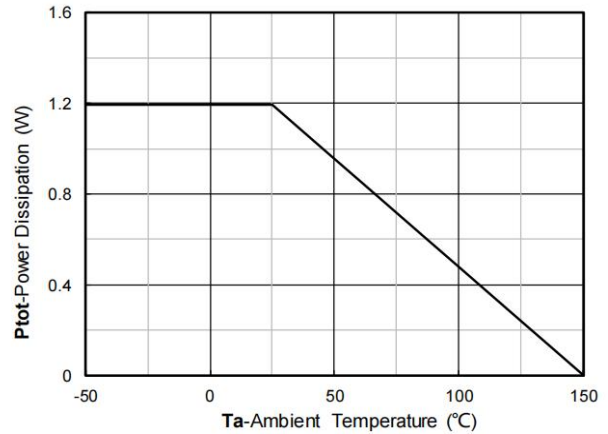


Figure 12. Power dissipation

Typical Characteristics

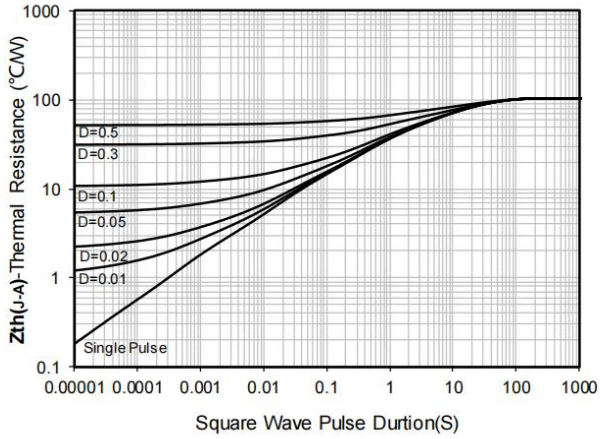


Figure 13. Maximum Transient Thermal Impedance

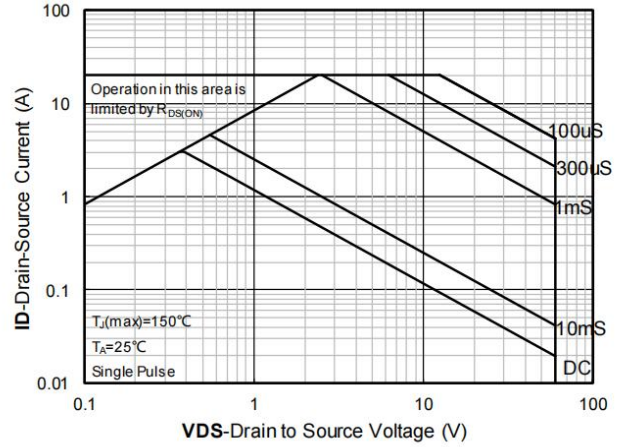
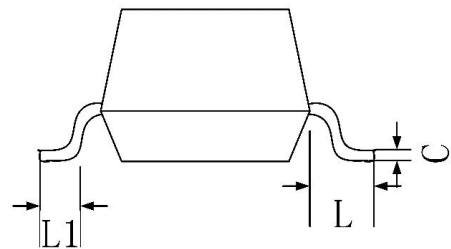
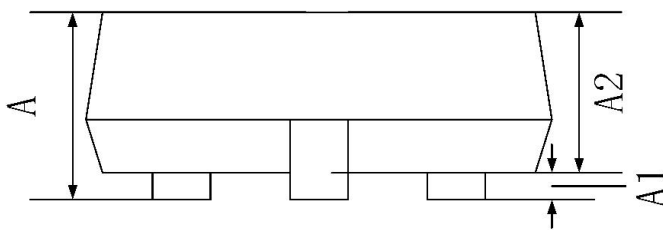
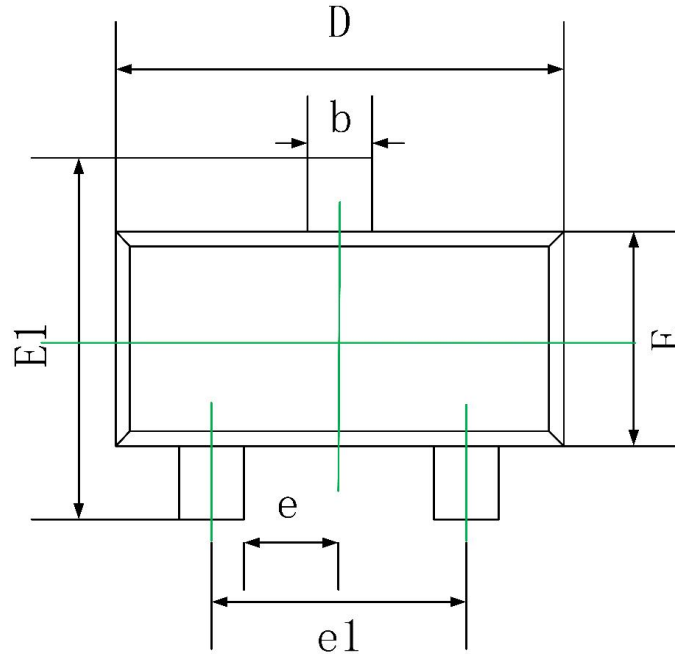


Figure 14. Safe Operation Area

SOT-23 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020