

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	120mΩ@10V	3A
	140mΩ@4.5V	

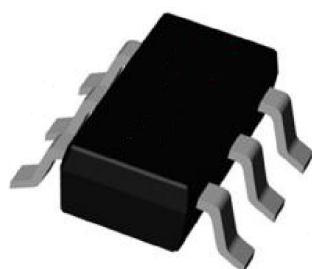
Feature

- Trench Power MV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(on)}$
- Suffix "-Q1" for AEC-Q101

Application

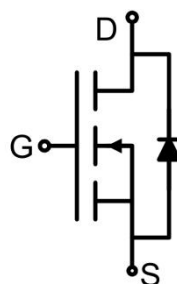
- DC-DC Converters
- Power management functions

Package

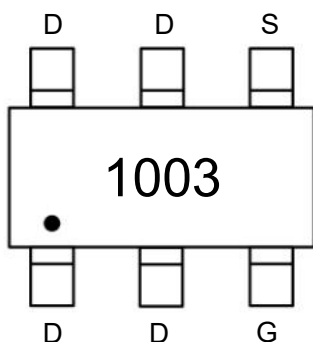


SOT-23-6L

Circuit diagram



Marking



Absolute maximum ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	3	A
Continuous Drain Current ($T_A=70^{\circ}\text{C}$)	$I_D(70^{\circ}\text{C})$	2.4	A
Pulsed Drain Current ¹⁾	I_{DM}	12	A
Single Pulse Avalanche Energy	E_{AS}	8	mJ
Power Dissipation	P_D	1.5	W
Thermal Resistance Junction to Ambient ²⁾	$R_{\theta JA}$	83	$^{\circ}\text{C/W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

Electrical characteristics ($T_J=25^{\circ}\text{C}$, 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	100			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.1	1.8	3	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =3A		95	120	mΩ
		V _{GS} =4.5V, I _D =2.4A		100	140	
Dynamic characteristics ³⁾						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f =1MHz		1070		pF
Output Capacitance	C _{oss}			33		
Reverse Transfer Capacitance	C _{rss}			30		
Total Gate Charge	Q _g	V _{DS} =50V, V _{GS} =10V, I _D =10A		26		nC
Gate-Source Charge	Q _{gs}			5.4		
Gate-Drain Charge	Q _{gd}			5.8		
Turn-on delay time	t _{d(on)}	V _{DS} =50V, V _{GS} =10V, R _G =3Ω R _L =6.4Ω		7		nS
Turn-on rise time	t _r			24		
Turn-off delay time	t _{d(off)}			24		
Turn-off fall time	t _f			31		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				3	A
Diode Forward voltage	V _{DS}	V _{GS} =0V, I _S =3A			1.2	V
Reverse recover time	T _{rr}	I _F =10A, di/dt =100A/us		40		nS
Reverse recovery charge	Q _{rr}			30.1		nC

Notes:

1) Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$.

2) $R_{\theta JA}$ is the sum of the junction-to-lead and lead-to-ambient thermal resistance, where the lead thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JL}$ is guaranteed by design, while $R_{\theta JA}$ is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.

3) Guaranteed by design, not subject to production testing.

Typical Characteristics

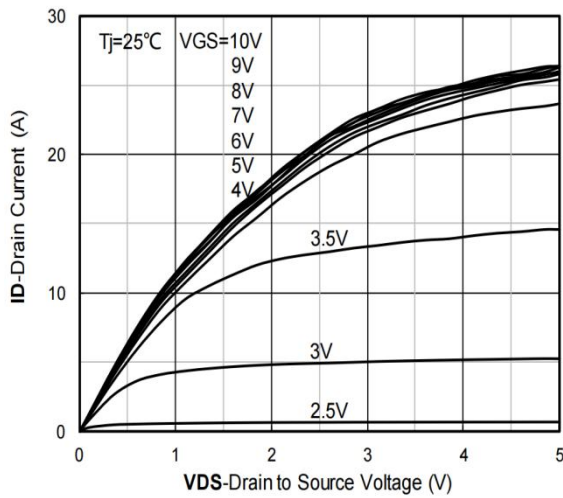


Figure 1. Output Characteristics

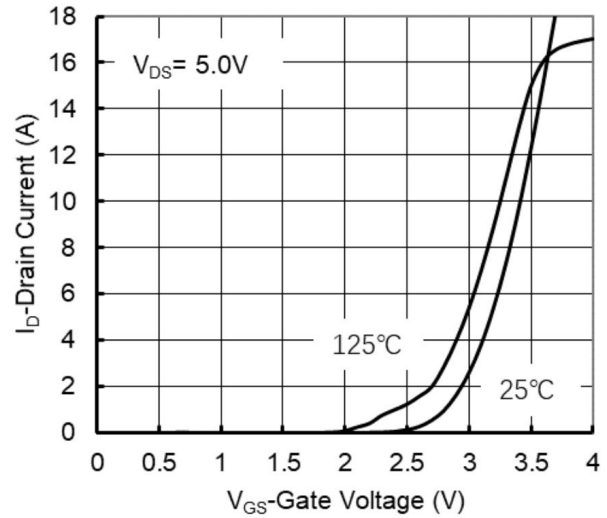


Figure 2. Transfer Characteristics

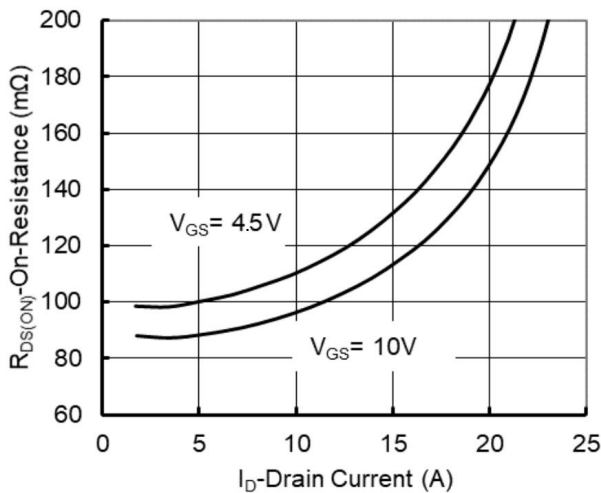


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

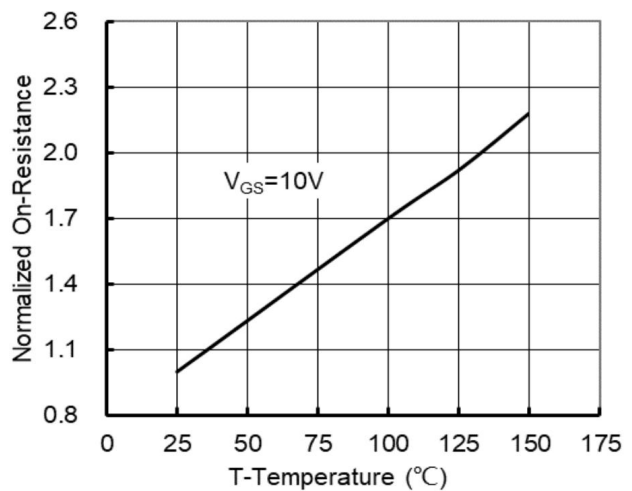


Figure 4. On-Resistance vs. Junction Temperature

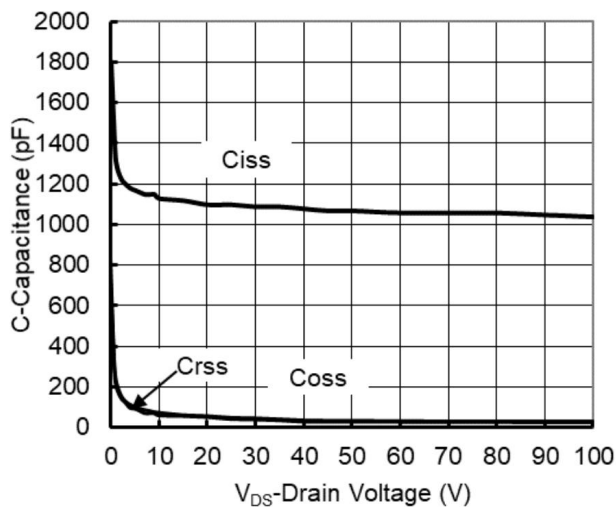


Figure 5. Capacitance Characteristics

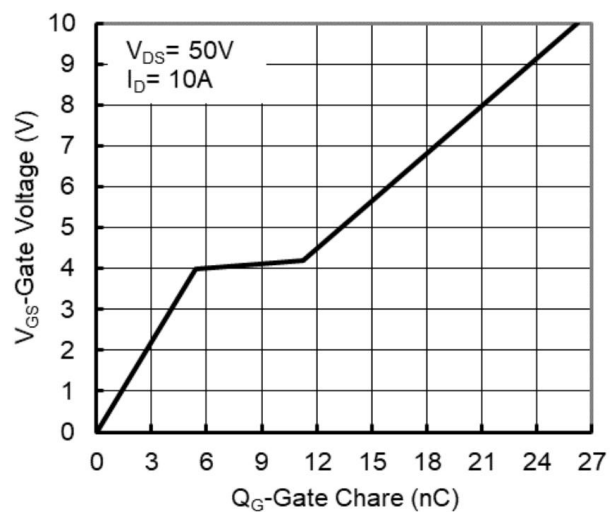


Figure 6. Gate Charge

Typical Characteristics

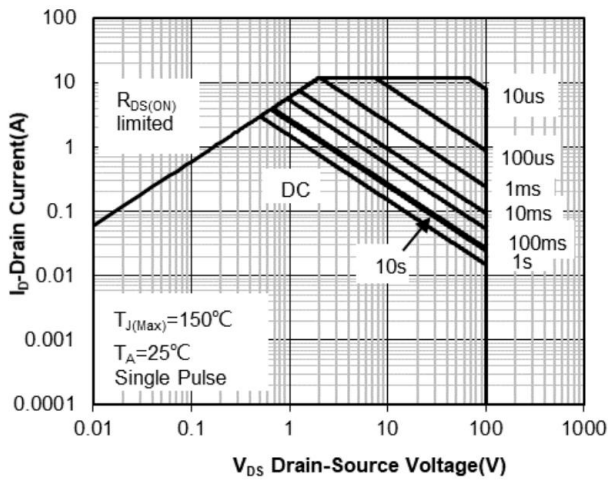


Figure 7. Safe Operation Area

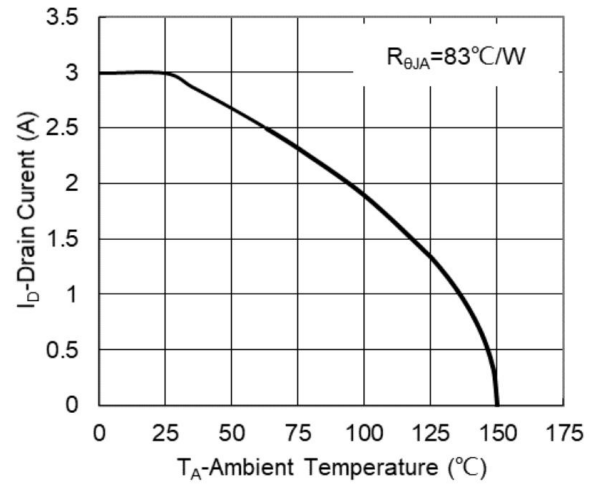


Figure 8. Maximum Continuous Drain Current vs Ambient Temperature

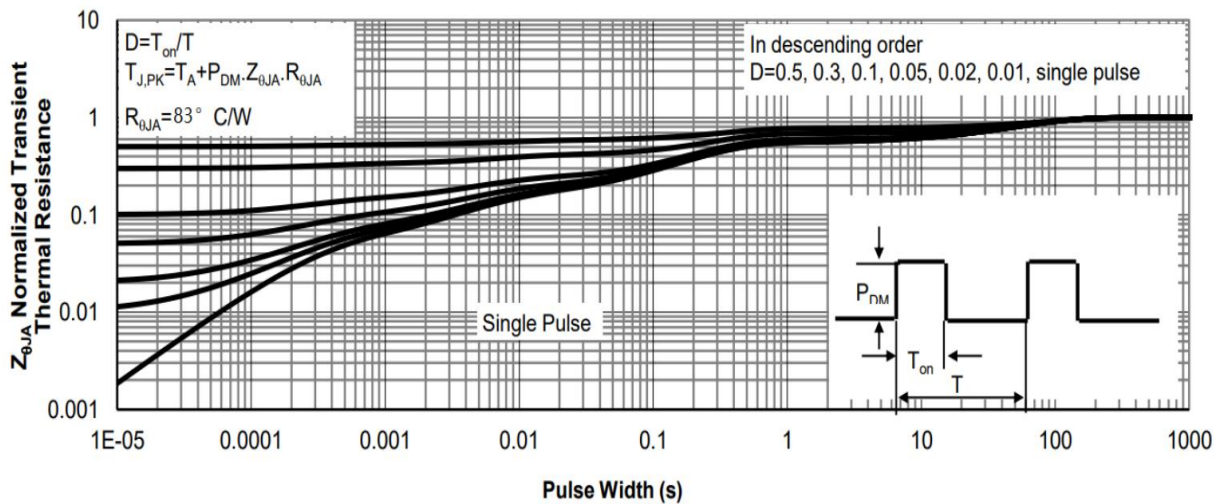


Figure 9. Normalized Maximum Transient Thermal Impedance

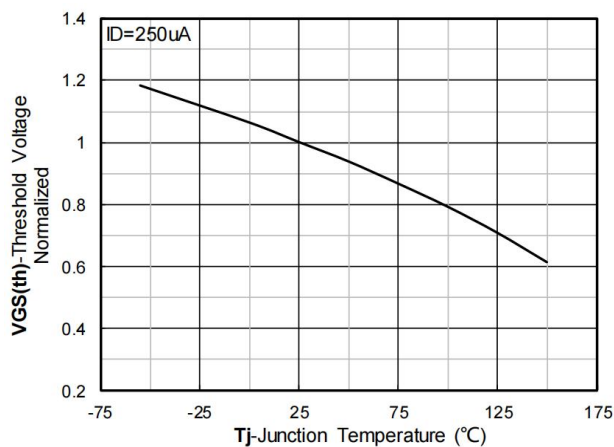
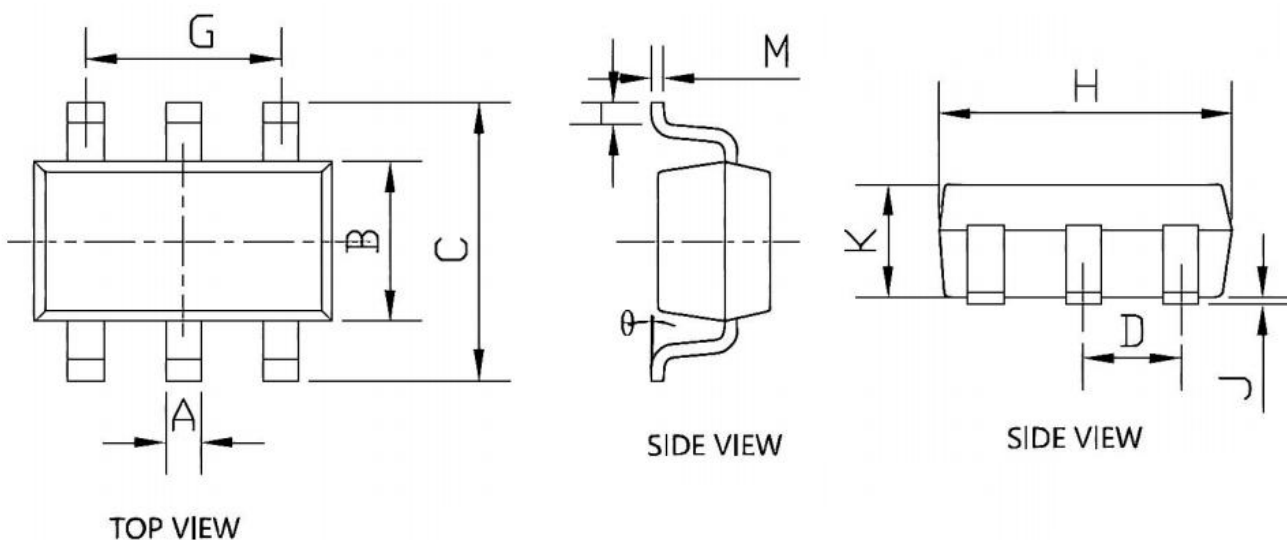


Figure 10. Normalized Threshold voltage

SOT-23-6L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.300	0.500	0.012	0.020
B	1.500	1.700	0.059	0.067
C	2.650	2.950	0.104	0.116
D	0.950 BSC.		0.037 BSC.	
G	1.900 BSC.		0.075 BSC.	
H	2.820	3.020	0.111	0.119
J	0.000	0.100	0.000	0.004
K	1.050	1.150	0.041	0.045
L	0.300	0.600	0.012	0.024
M	0.100	0.200	0.004	0.008
θ	0°	8°	0°	8°