

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-55V	82mΩ@-10V	-4A

Feature

- Fully characterized avalanche voltage and current
- High Density Cell Design For Ultra Low $R_{DS(on)}$
- Excellent package for good heat dissipation
- Suffix "-Q1" for AEC-Q101

Application

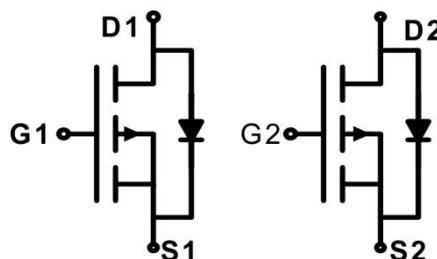
- Hard switched and high frequency circuits
- Power switching applications
- DC-DC converter

Package

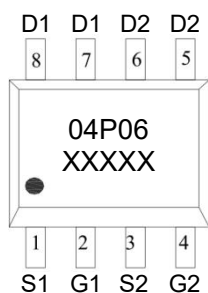


SOP-8

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-55	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-4	A
Continuous Drain Current (100°C)	I_D (100°C)	-2.8	A
Pulsed Drain Current	I_{DM}	-25	A
Power Dissipation	P_D	3	W
Thermal Resistance from Junction to Ambient ⁴⁾	$R_{\theta JA}$	42	°C/W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 ~ +150	°C

Electrical characteristics (Ta=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	-55			V
Zero gate voltage drain current	I _{DSS}	V _{DS} = -55V, 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	-1.5	-2.6	-3.5	V
Drain-source on-resistance ¹⁾	R _{DS(on)}	V _{GS} = -10V, I _D = -4.0A		66	82	mΩ
Forward transconductance	g _{FS}	V _{DS} = -15V, I _D = -4.0A	16			S
Dynamic characteristics ²⁾						
Input Capacitance	C _{iss}	V _{DS} = -25V, V _{GS} = 0V, f = 1MHz		1450		pF
Output Capacitance	C _{oss}			145		
Reverse Transfer Capacitance	C _{rss}			110		
Total Gate Charge	Q _g	V _{DS} = -30V, V _{GS} = -10V, I _D = -4.0A		26		nC
Gate-Source Charge	Q _{gs}			4.5		
Gate-Drain Charge	Q _{gd}			7		
Turn-on delay time	t _{d(on)}	V _{DD} = -30V, V _{GS} = -10V, R _L = 30Ω, R _{GEN} = 6Ω		8		nS
Turn-on rise time	t _r			9		
Turn-off delay time	t _{d(off)}			65		
Turn-off fall time	t _f			30		
Source-Drain Diode characteristics						
Diode Forward Current ⁴⁾	I _S				-4.0	A
Diode Forward voltage ¹⁾	V _{DS}	V _{GS} = 0V, I _S = -4.0A			-1.2	V

Notes:

- 1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.
- 2) Guaranteed by design, not subject to production testing.
- 3) Repetitive Rating: Pulse width limited by maximum junction temperature.
- 4) Surface Mounted on FR4 Board, t ≤ 10 sec.

Typical Characteristics

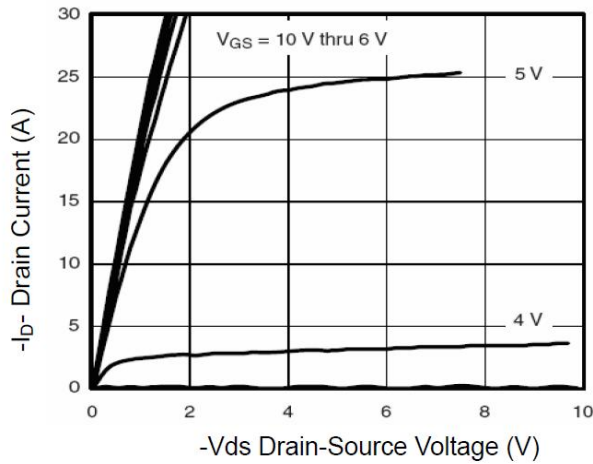


Figure 1 Output Characteristics

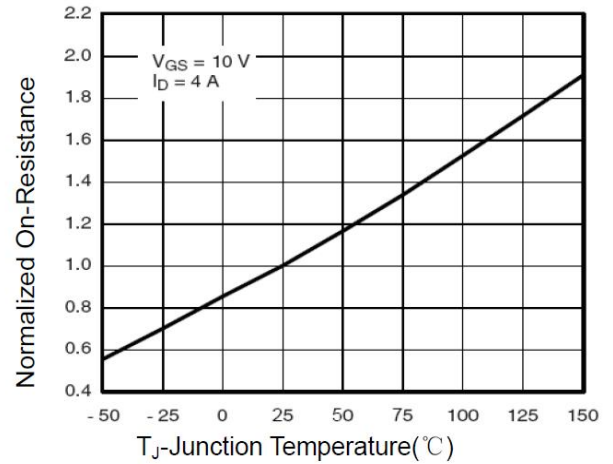


Figure 2 Rdson-Junction Temperature

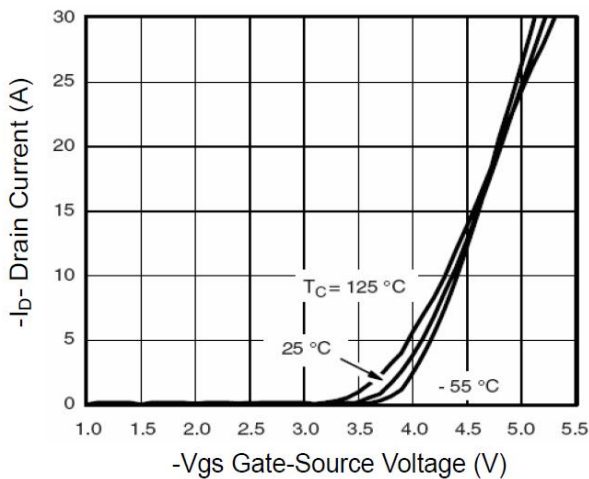


Figure 3 Transfer Characteristics

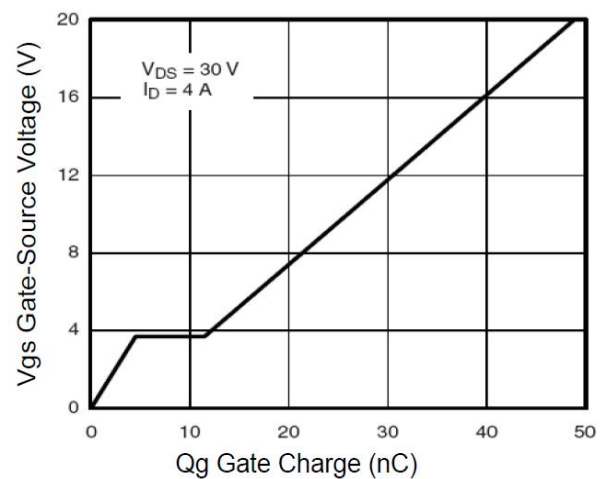


Figure 4 Gate Charge

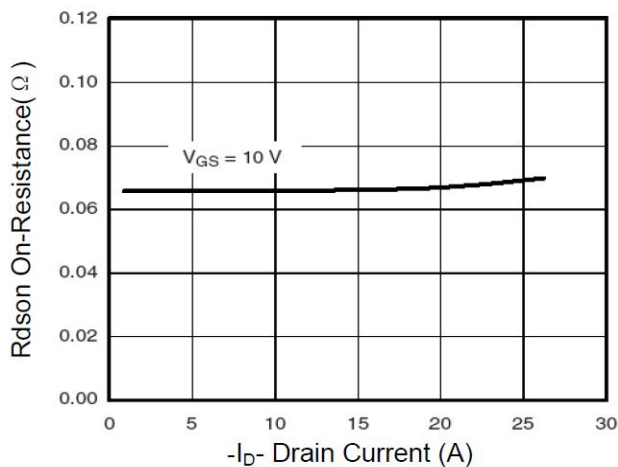


Figure 5 Rdson- Drain Current

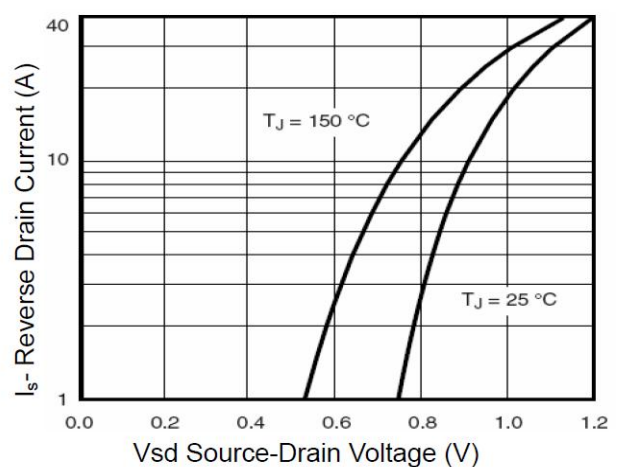


Figure 6 Source- Drain Diode Forward

Typical Characteristics

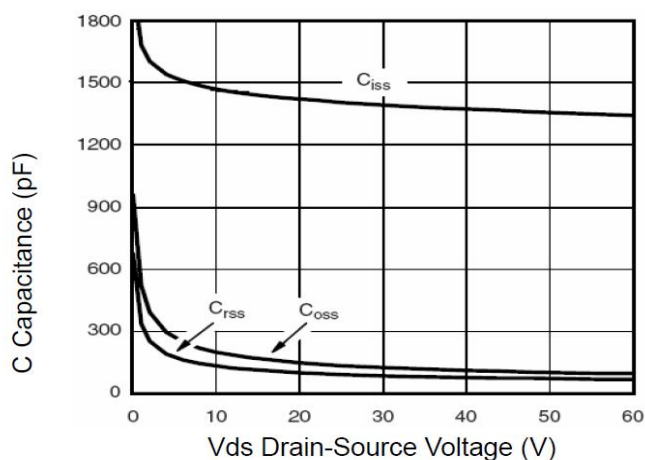


Figure 7 Capacitance vs Vds

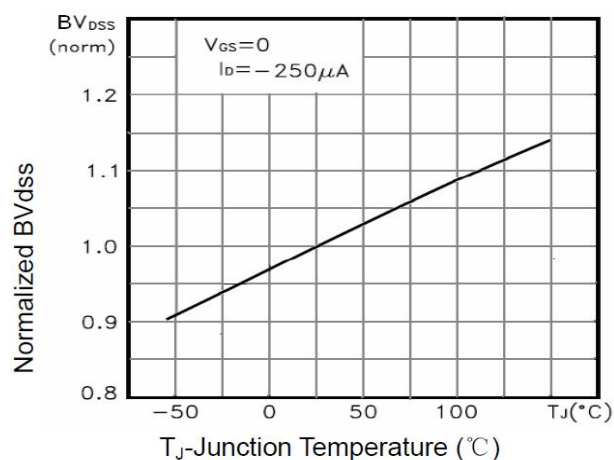


Figure 8 BV_{dss} vs Junction Temperature

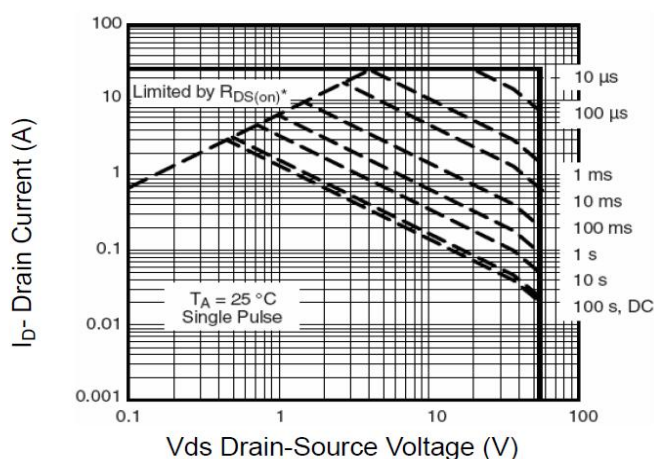


Figure 9 Safe Operation Area

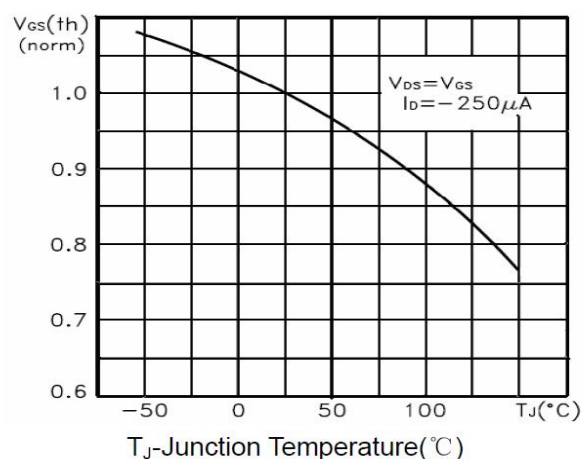


Figure 10 $V_{GS(th)}$ vs Junction Temperature

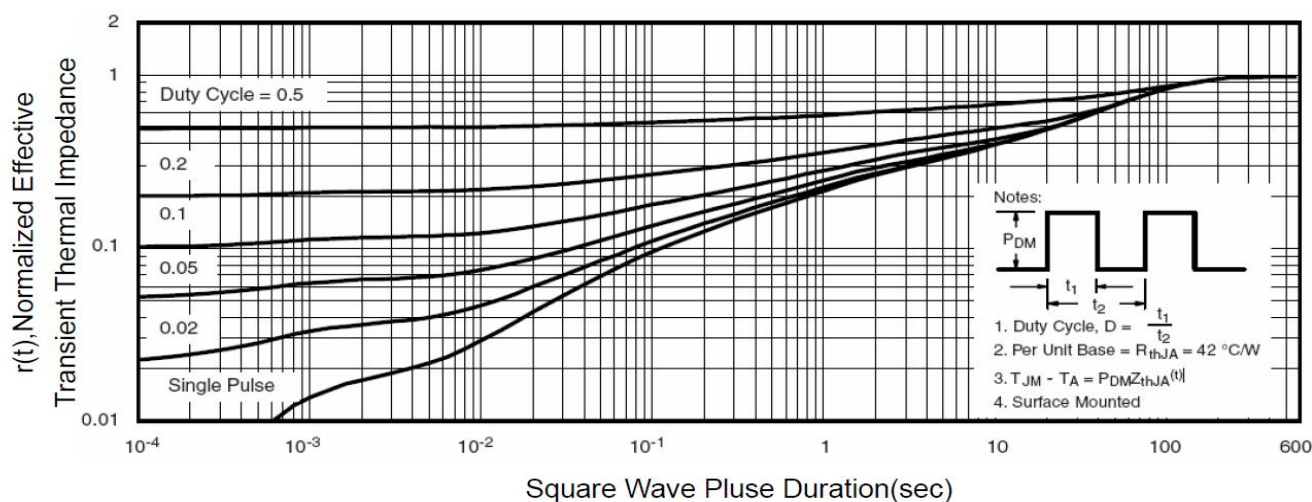
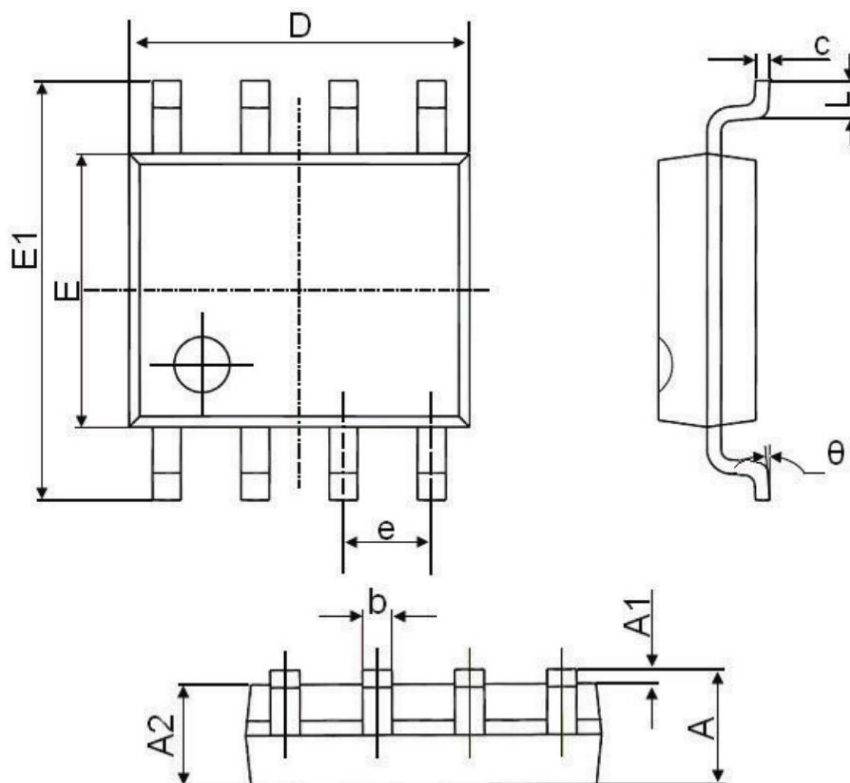


Figure 11 Normalized Maximum Transient Thermal Impedance

SOP-8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°