

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
30V	28mΩ@4.5V	10A
	35mΩ@2.5V	
	45mΩ@1.8V	

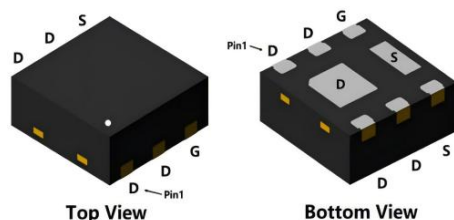
Feature

- Split gate trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Suffix "-Q1" for AEC-Q101

Application

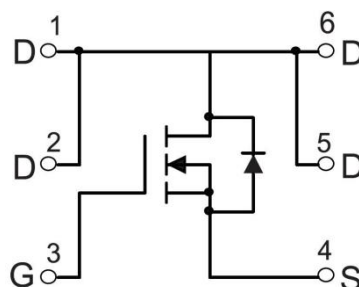
- Power switching application
- Uninterruptible power supply
- DC-DC converters

Package

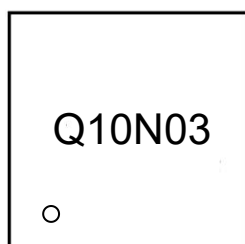


DFN2*2-6L

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current ($T_C=25^{\circ}\text{C}$)	I_D	10	A
Continuous Drain Current ($T_C=100^{\circ}\text{C}$)	$I_D (100^{\circ}\text{C})$	6	A
Pulsed Drain Current ¹⁾	I_{DM}	40	A
Power Dissipation ²⁾	P_D	1.5	W
Thermal Resistance Junction to Ambient ³⁾	$R_{\theta JA}$	83	$^{\circ}\text{C/W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature Range	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	30			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.45	0.7	1	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =10A		20	28	mΩ
		V _{GS} =2.5V, I _D =8A		25	35	
		V _{GS} =1.8V, I _D =6A		32	45	
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f =1MHz		520		pF
Output Capacitance	C _{oss}			60		
Reverse Transfer Capacitance	C _{rss}			50		
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =10V, I _D =10A		16.5		nC
Gate-Source Charge	Q _{gs}			2		
Gate-Drain Charge	Q _{gd}			2		
Turn-on delay time	t _{d(on)}	V _{DS} =15V, V _{GS} =10V, I _D =10A R _G =3Ω		6		nS
Turn-on rise time	t _r			50		
Turn-off delay time	t _{d(off)}			20		
Turn-off fall time	t _f			90		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				10	A
Diode forward voltage	V _{SD}	V _{GS} =0V, I _S =10A			1.2	V
Reverse Recovery Time	T _{rr}	I _F =10A, di/dt =100A/μs		6		nS
Reverse Recovery Charge	Q _{rr}			1.6		nC

Notes:

- 1) Repetitive rating; pulse width limited by max. junction temperature.
- 2) P_D is based on max. junction temperature, using junction-case thermal resistance.
- 3) The value of $R_{\theta JA}$ is measured with the device mounted on 1 in2 FR-4 board with 2oz. Copper, in the still air environment with $T_A=25^{\circ}\text{C}$. The maximum allowed junction temperature of 150°C .
The value in any given application depends on the user's specific board design.
- 4) Guaranteed by design, not subject to production.

Typical Characteristics

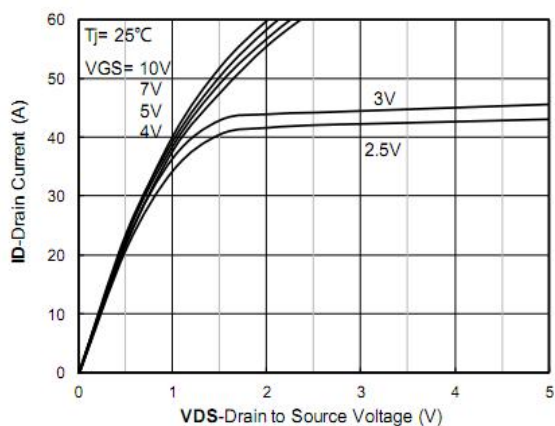


Figure 1. Output Characteristics

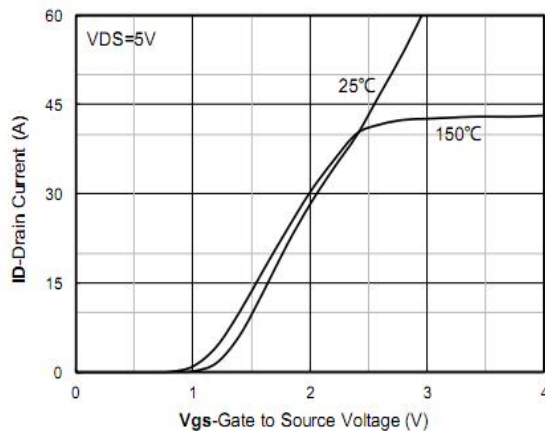


Figure 2. Transfer Characteristics

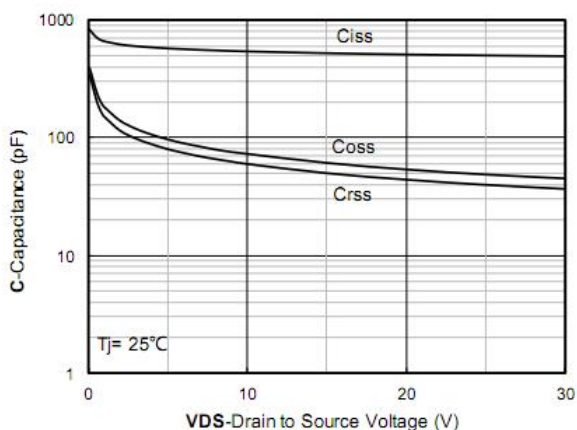


Figure 3. Capacitance Characteristics

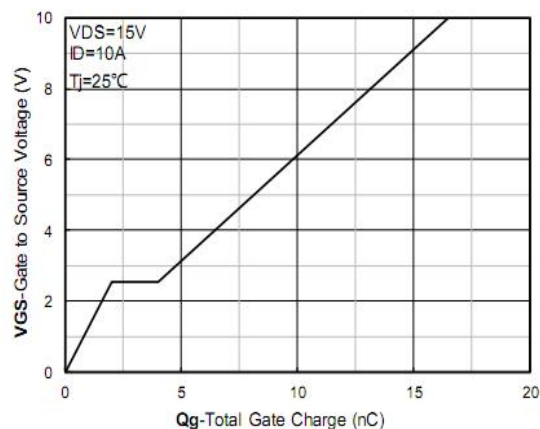


Figure 4. Gate Charge

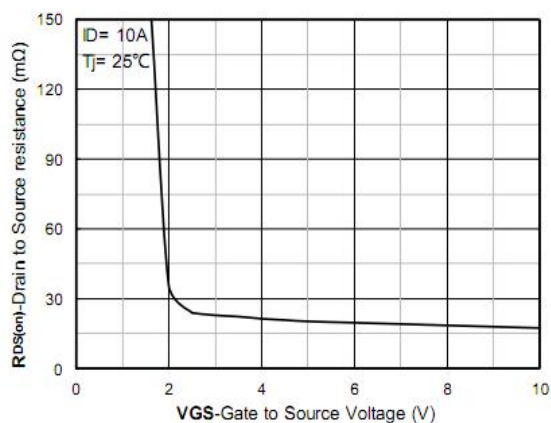


Figure 5. On-Resistance vs Gate to Source Voltage

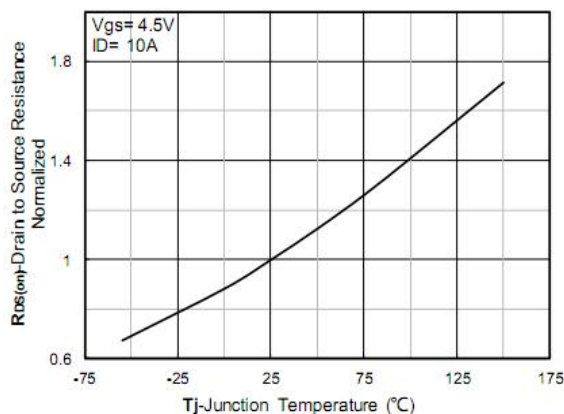


Figure 6. Normalized On-Resistance

Typical Characteristics

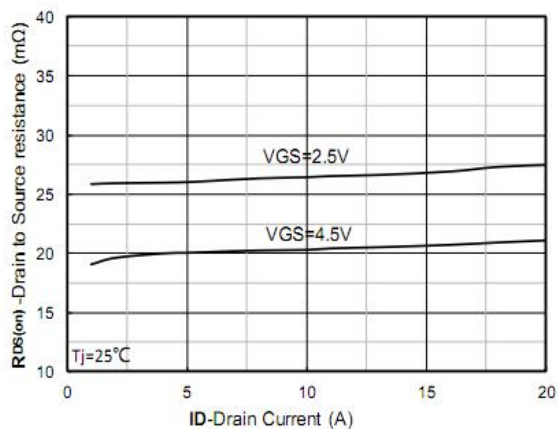


Figure 7. $R_{DS(on)}$ VS Drain Current

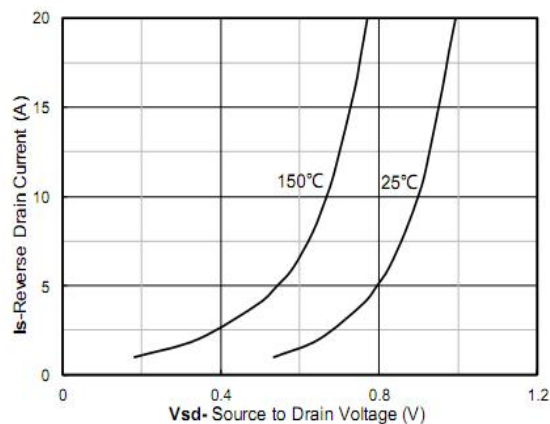


Figure 8. Forward characteristics of reverse diode

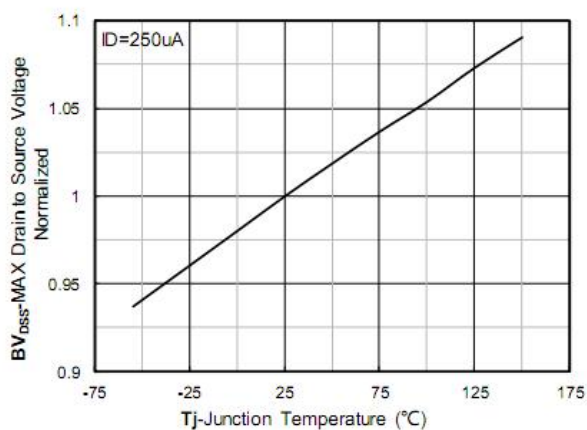


Figure 9. Normalized breakdown voltage

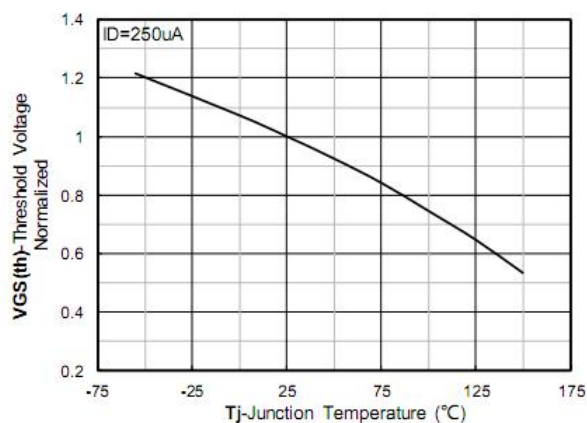


Figure 10. Normalized Threshold voltage

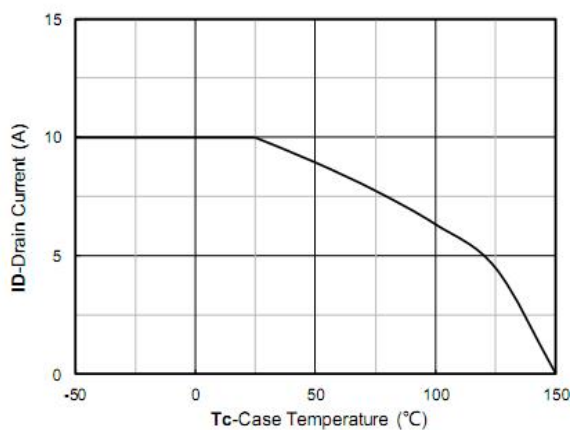


Figure 11. Current dissipation

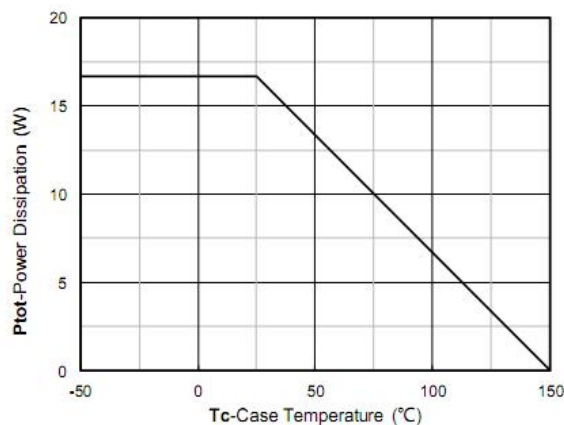


Figure 12. Power dissipation

Typical Characteristics

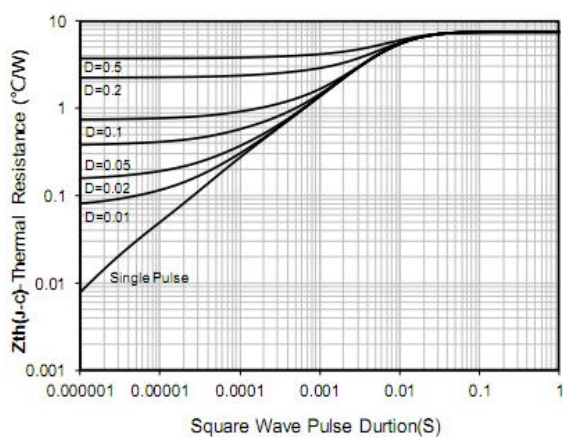


Figure 13. Maximum Transient Thermal Impedance

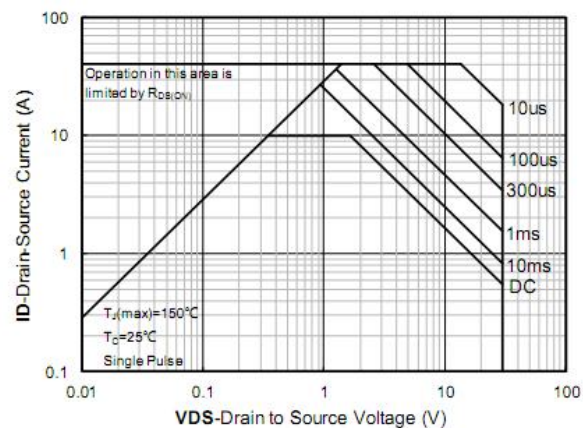
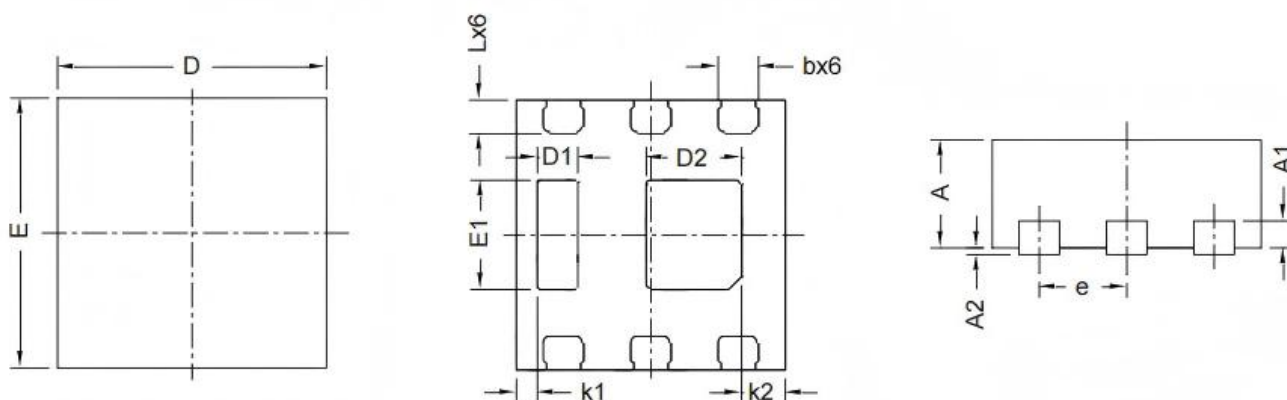


Figure 14. Safe Operation Area

DFN2*2-6L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
D	1.900	2.100	0.075	0.083
E	1.900	2.100	0.075	0.083
A	0.700	0.900	0.028	0.035
A1	0.200 BSC.		0.008 BSC.	
A2	-	0.100	-	0.004
D1	0.200	0.400	0.008	0.016
D2	0.610	0.810	0.024	0.032
E1	0.710	0.910	0.028	0.036
L	0.150	0.350	0.006	0.014
b	0.200	0.400	0.008	0.016
e	0.650 BSC.		0.026 BSC.	
k1	0.156 BSC.		0.006 BSC.	
k2	0.326 BSC.		0.013 BSC.	