

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-20V	19mΩ@-4.5V	-16A
	22mΩ@-2.5V	
	30mΩ@-1.8V	

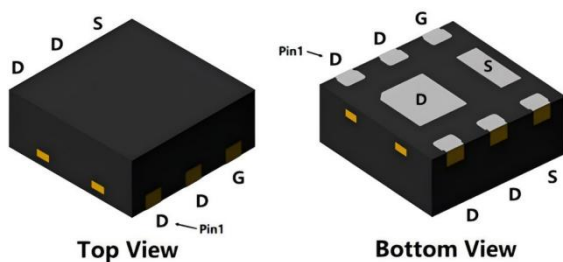
Feature

- Trench Power MV MOSFET technology
- High density cell design for Low $R_{DS(on)}$
- High Speed switching
- Suffix "-Q1" for AEC-Q101

Application

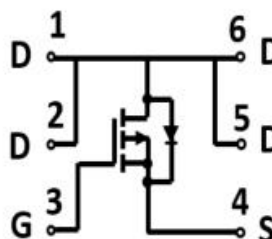
- Battery protection
- Load switch
- Power management

Package

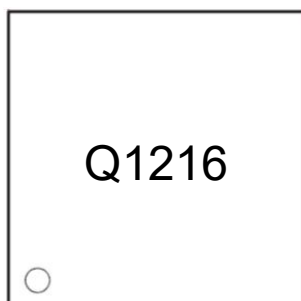


DFN2*2-6L

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current ($T_C=25^{\circ}\text{C}$)	I_D	-16	A
Continuous Drain Current ($T_C=70^{\circ}\text{C}$)	$I_D(70^{\circ}\text{C})$	-12.8	A
Pulsed Drain Current ¹⁾	I_{DM}	-64	A
Power Dissipation	P_D	18	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	6.9	$^{\circ}\text{C}/\text{W}$
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	-20			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V, T _C =25℃			-1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±10V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.4	-0.62	-1	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =-4.5V, I _D =-10A		11	19	mΩ
		V _{GS} =-2.5V, I _D =-6.5A		14	22	
		V _{GS} =-1.8V, I _D =-4A		20	30	
Dynamic characteristics ²⁾						
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f =1MHz		2992		pF
Output Capacitance	C _{oss}			330		
Reverse Transfer Capacitance	C _{rss}			272		
Total Gate Charge	Q _g	V _{DS} =-15V, V _{GS} =-10V I _D =-9.1A		72.8		nC
Gate-Source Charge	Q _{gs}			6.6		
Gate-Drain Charge	Q _{gd}			10.1		
Turn-on delay time	t _{d(on)}	V _{DS} =-15V, V _{GS} =-10V I _D =-6A, R _G =2.5Ω		7		nS
Turn-on rise time	t _r			33		
Turn-off delay time	t _{d(off)}			130		
Turn-off fall time	t _f			132		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				-16	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =-13A			-1.2	V
Reverse recover time	T _{rr}	I _F =-6A, di/dt =-100A/us		67		nS
Reverse recovery charge	Q _{rr}			34		nC

Notes:

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

2) Guaranteed by design, not subject to production.

Typical Characteristics

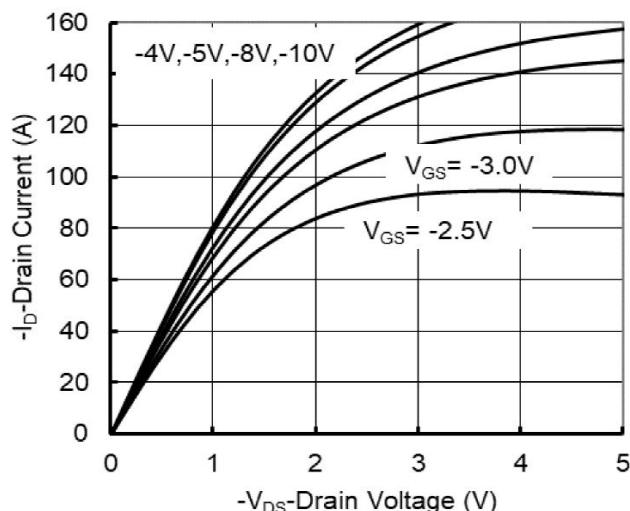


Figure 1. Output Characteristics

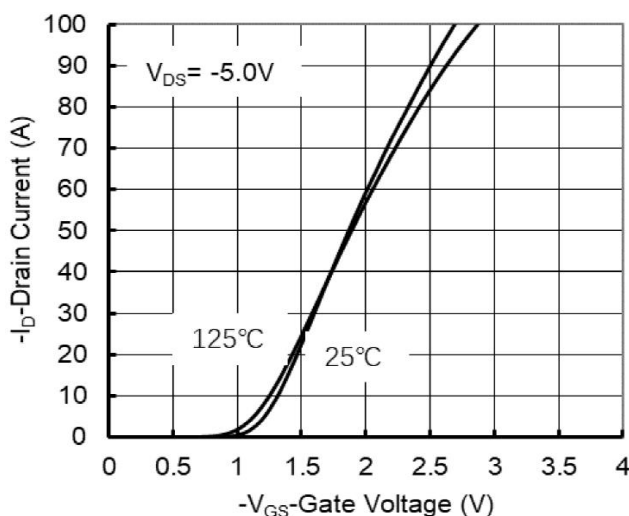


Figure 2. Transfer Characteristics

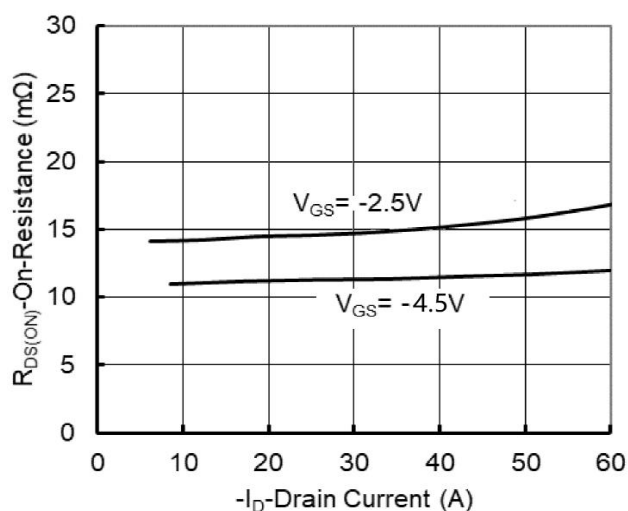


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

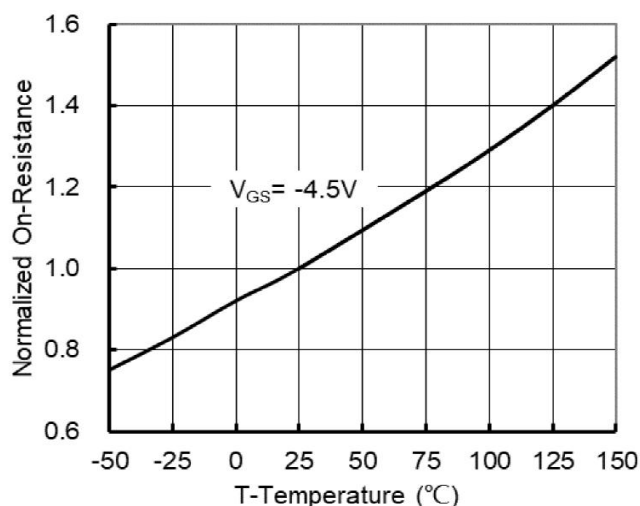


Figure 4. On-Resistance vs. Junction Temperature

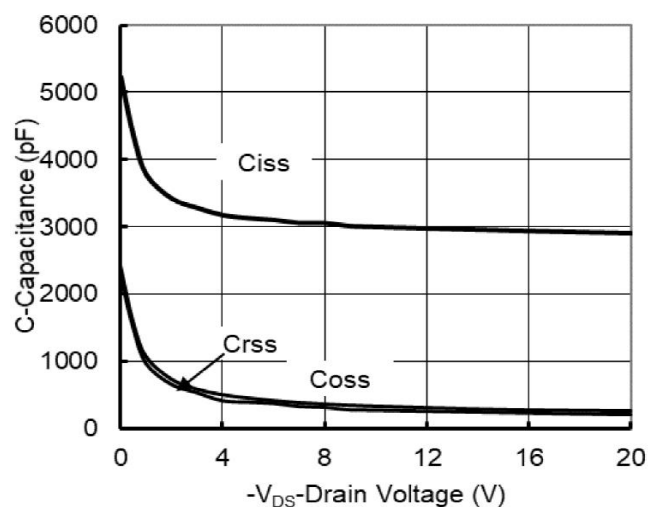


Figure 5. Capacitance Characteristics

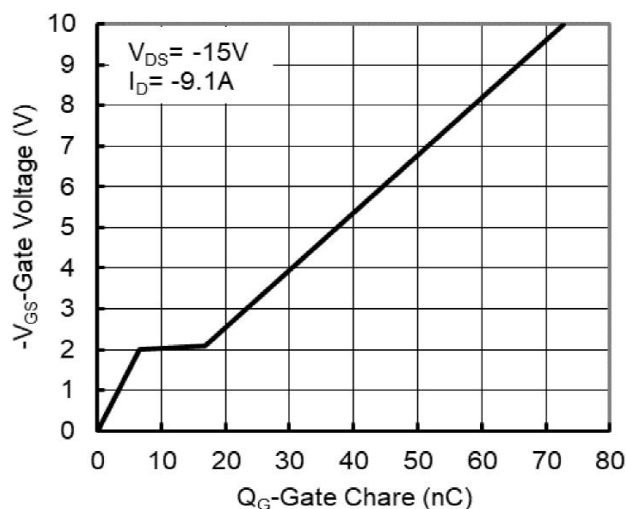


Figure 6. Gate Charge

Typical Characteristics

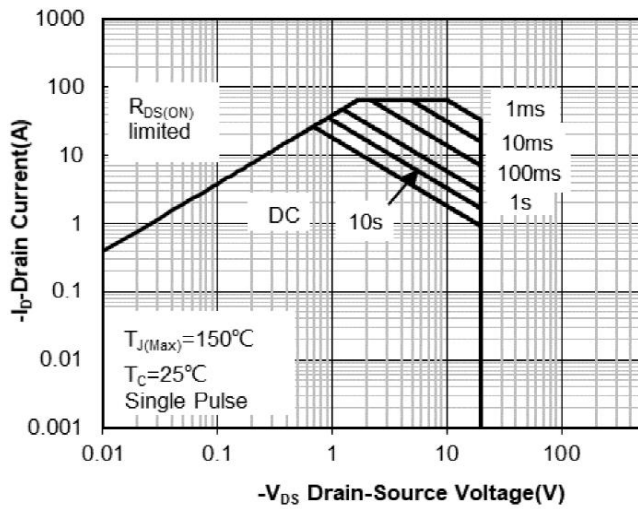


Figure 7. Safe Operation Area

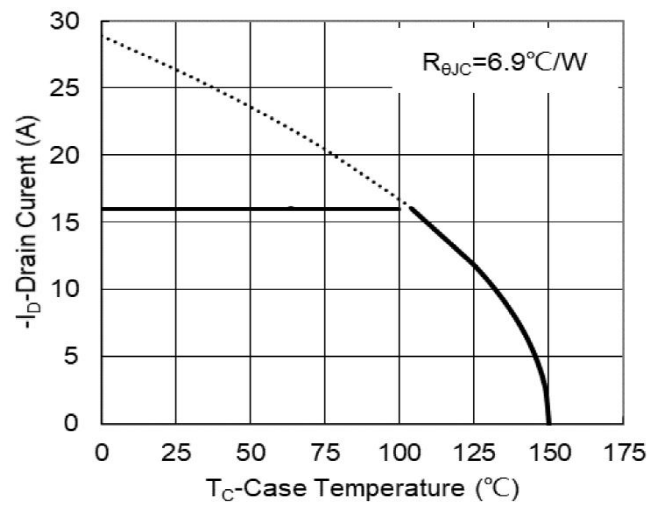
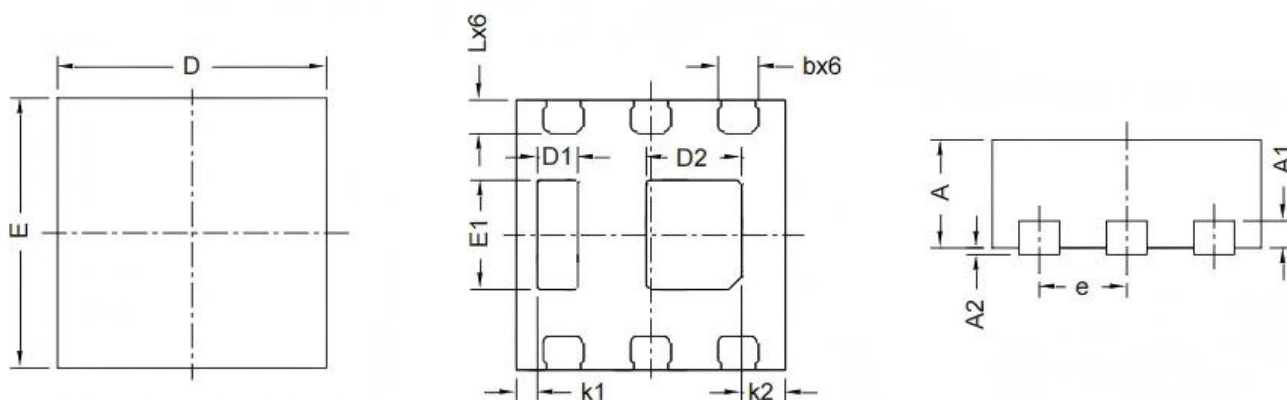


Figure 8. Maximum Continuous Drain Current vs Case Temperature

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.	