

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-12V	18mΩ@-4.5V	-16A
	22mΩ@-2.5V	

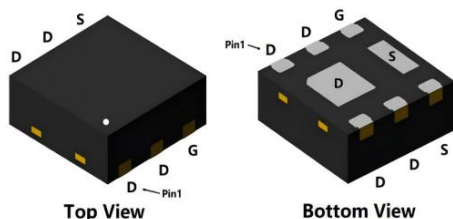
Feature

- Advanced trench MOSFET process technology
- Ultra low on-resistance with low gate charge
- Suffix “-Q1” for AEC-Q101

Application

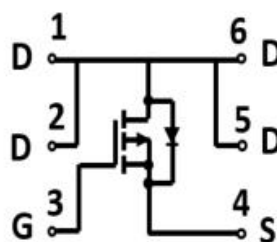
- PWM applications
- Load switch
- Battery charge in cellular handset

Package

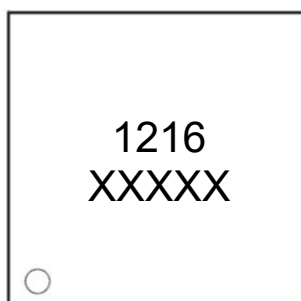


DFN2*2-6L

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	-12	V
Gate-Source Voltage	V _{GS}	±12	V
Continuous Drain Current	I _D	-16	A
Pulsed Drain Current ¹⁾	I _{DM}	-65	A
Power Dissipation	P _D	18	W
Thermal Resistance Junction to-Case ²⁾	R _{θJC}	6.9	°C/W
Operating Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

Electrical characteristics (T_A=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	-12			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =-12V, V _{GS} =0V			-1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±100	nA
Gate threshold voltage ³⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.4	-0.7	-1	V
Drain-source on-resistance ³⁾	R _{DS(on)}	V _{GS} =-4.5V, I _D =-6.7A		11.5	18	mΩ
		V _{GS} =-2.5V, I _D =-6.2A		14	22	
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f =1MHz		2700		pF
Output Capacitance	C _{oss}			680		
Reverse Transfer Capacitance	C _{rss}			590		
Total Gate Charge	Q _g	V _{DS} =-6V, V _{GS} =-4.5V I _D =-10A		35		nC
Gate-Source Charge	Q _{gs}			5		
Gate-Drain Charge	Q _{gd}			10		
Turn-on delay time	t _{d(on)}	V _{DS} =-10V, V _{GS} =-4.5V I _D =-1A, R _G =10Ω		11		nS
Turn-on rise time	t _r			35		
Turn-off delay time	t _{d(off)}			30		
Turn-off fall time	t _f			10		
Source-Drain Diode characteristics						
Diode Forward Current ²⁾	I _S				-16	A
Diode Forward voltage ³⁾	V _{SD}	V _{GS} =0V, I _S =-8A			-1.2	V

Notes:

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

Typical Characteristics

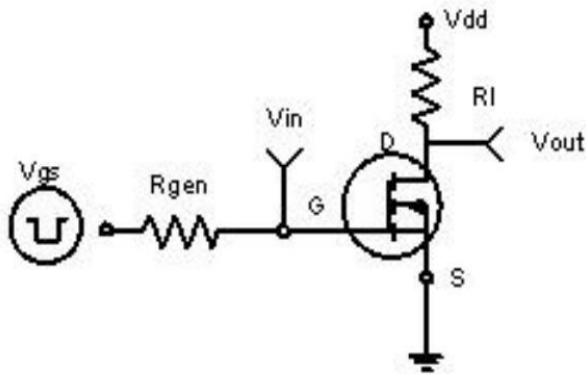


Figure 1: Switching Test Circuit

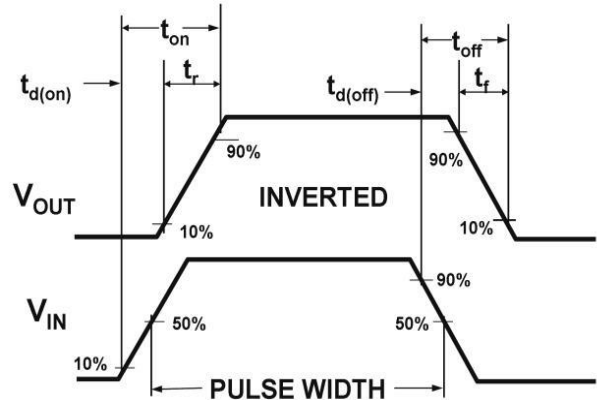


Figure 2: Switching Waveforms

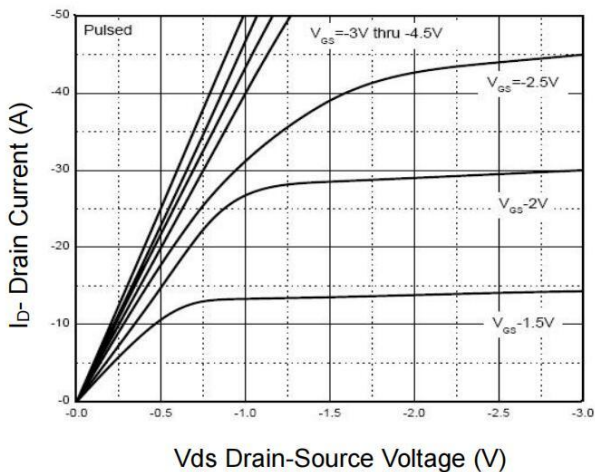


Figure 3 Output Characteristics

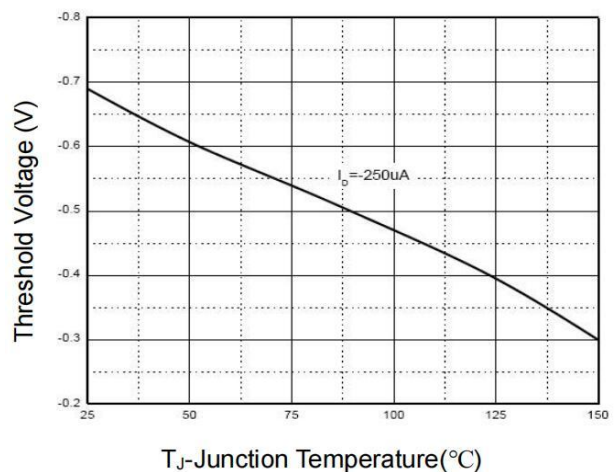


Figure 4 Drain Current

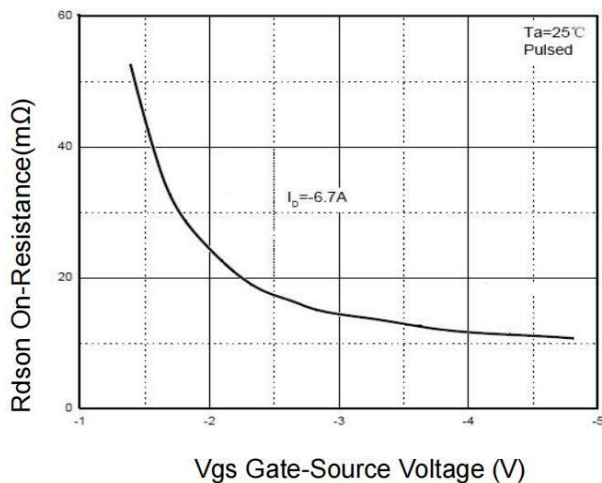


Figure 5 Rdson vs Vgs

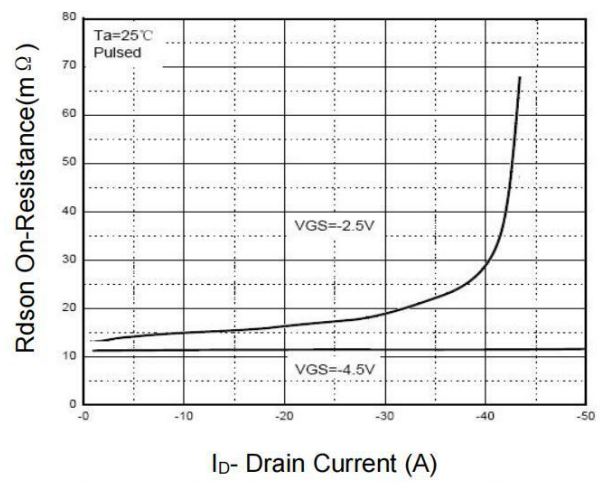
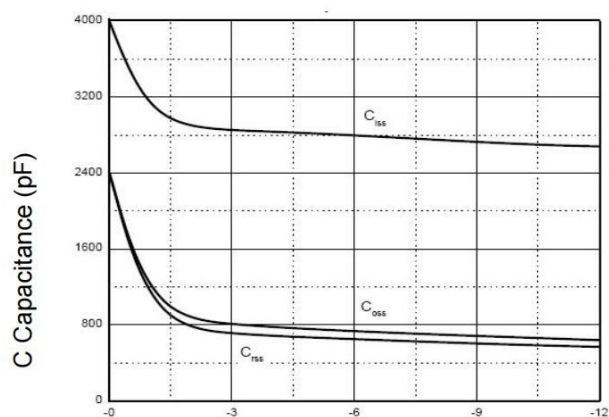
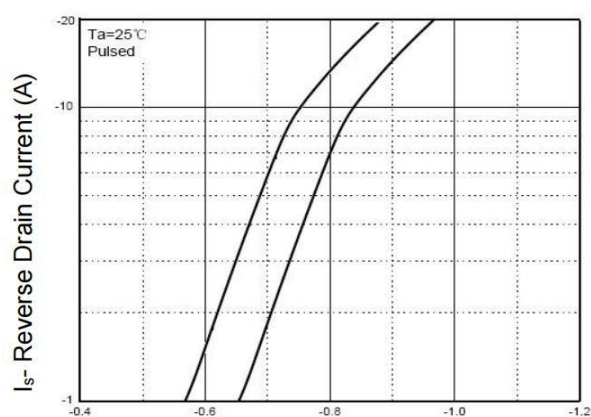


Figure 6 Drain-Source On-Resistance

Typical Characteristics

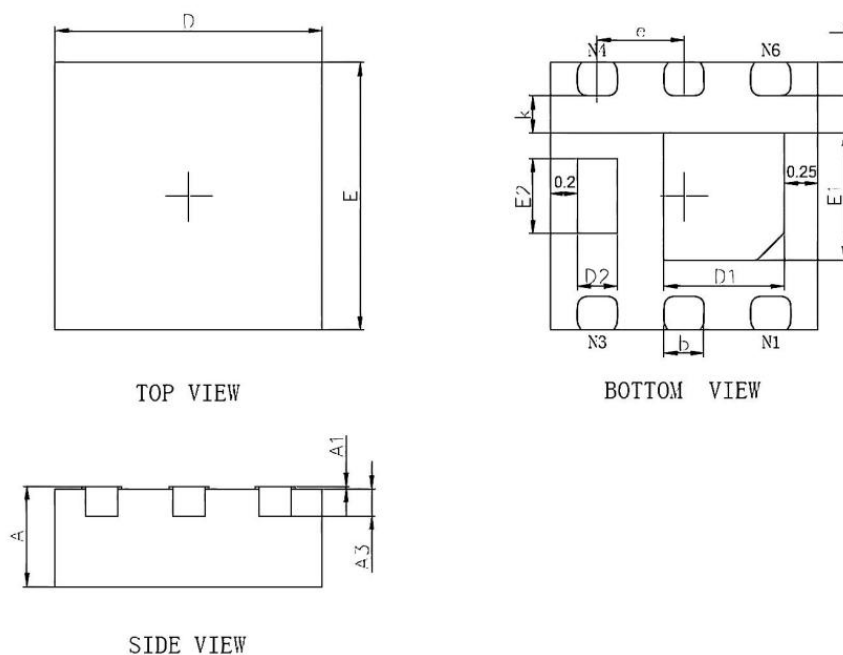


Vds Drain-Source Voltage (V)
Figure 7 Capacitance vs Vds



Vsd Source-Drain Voltage (V)
Figure 8 Source- Drain Diode Forward

DFN2*2-6L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203 REF.		0.008 REF.	
D	1.924	2.076	0.076	0.082
E	1.924	2.076	0.076	0.082
D1	0.800	1.000	0.031	0.039
E1	0.850	1.050	0.033	0.041
D2	0.200	0.400	0.008	0.016
E2	0.460	0.660	0.018	0.026
k	0.200	-	0.008	-
b	0.250	0.350	0.010	0.014
e	0.650 TYP.		0.026 TYP.	
L	0.174	0.326	0.007	0.013