

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	25mΩ@10V	16A
	30mΩ@4.5V	

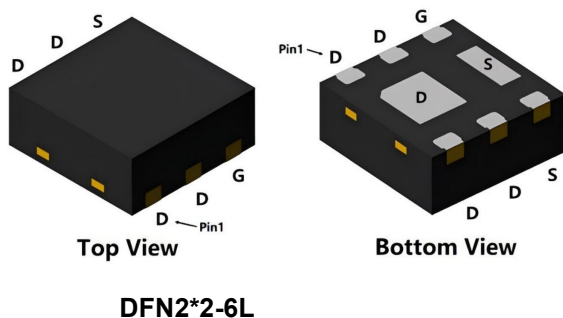
Feature

- Low $R_{DS(ON)}$
- Good stability and uniformity
- Suffix "-Q1" for AEC-Q101

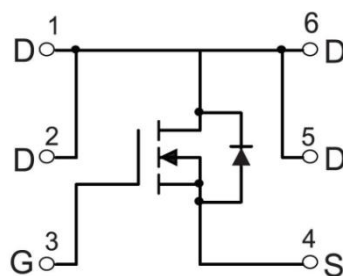
Application

- Battery protection
- Load Switch

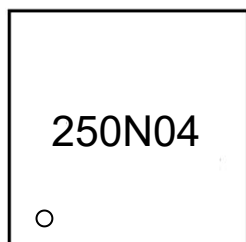
Package



Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	16	A
Pulsed Drain Current ($t_p=10\mu\text{s}$, $T_A=25^{\circ}\text{C}$)	I_{DM}	64	A
Single Pulse Avalanche Energy ¹⁾	E_{AS}	30	mJ
Power Dissipation	P_D	12.5	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	10	$^{\circ}\text{C/W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

Electrical characteristics ($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	40			V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=40V, V_{GS}=0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.4	2.5	V
Drain-source on-resistance ²⁾	$R_{DS(on)}$	$V_{GS}=10V, I_D=8A$		17	25	m Ω
		$V_{GS}=4.5V, I_D=5A$		21	30	
Dynamic characteristics ³⁾						
Input Capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V, f=1MHz$		732		pF
Output Capacitance	C_{oss}			59		
Reverse Transfer Capacitance	C_{rss}			46		
Total Gate Charge	Q_g	$V_{DS}=20V, V_{GS}=10V, I_D=5A$		16.7		nC
Gate-Source Charge	Q_{gs}			2.6		
Gate-Drain Charge	Q_{gd}			2.5		
Turn-on delay time	$t_{d(on)}$	$V_{DS}=20V, V_{GS}=10V, I_D=8A$ $R_L=1\Omega, R_G=3\Omega$		10		nS
Turn-on rise time	t_r			12		
Turn-off delay time	$t_{d(off)}$			32		
Turn-off fall time	t_f			8		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				16	A
Diode Forward voltage ²⁾	V_{SD}	$V_{GS}=0V, I_S=8A$			1.2	V
Reverse recover time	T_{rr}	$V_{GS}=0V, I_F=8A$ $di/dt=100A/us$		17		nS
Reverse recovery charge	Q_{rr}			6.2		nC

Notes:

 1) The EAS data shows Max. rating. The test condition is $V_{DD}=20\text{V}$, $V_{GS}=10\text{V}$, $L=10\text{mH}$.

 2) The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

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

Typical Characteristics

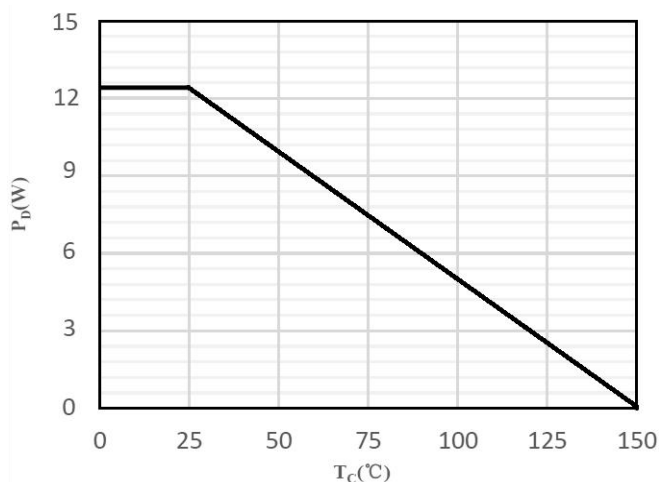


Fig 1 Power Dissipation

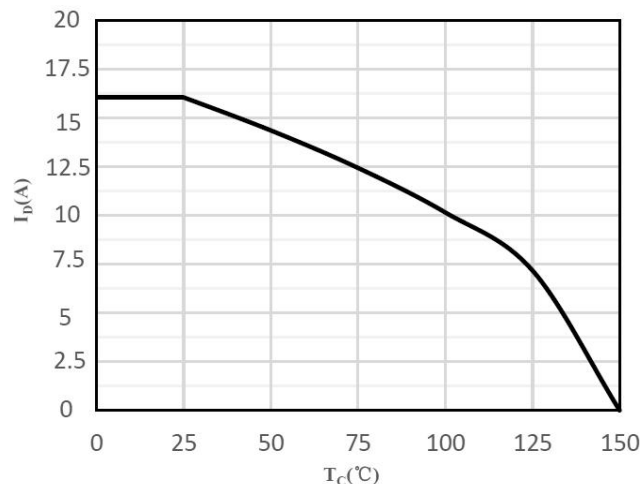


Fig 2 Drain Current

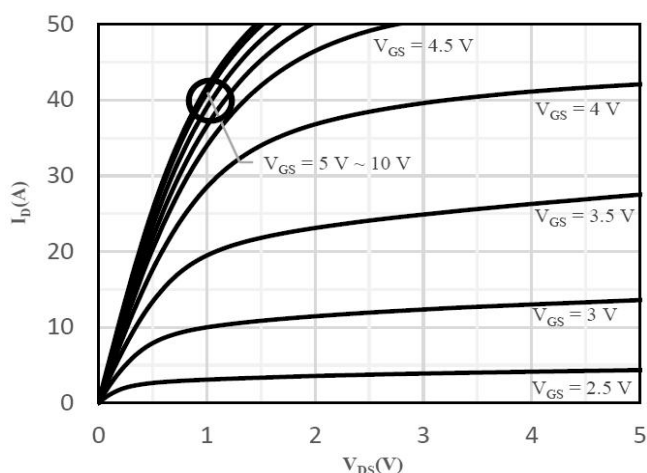


Fig 3 Typical Output Characteristics

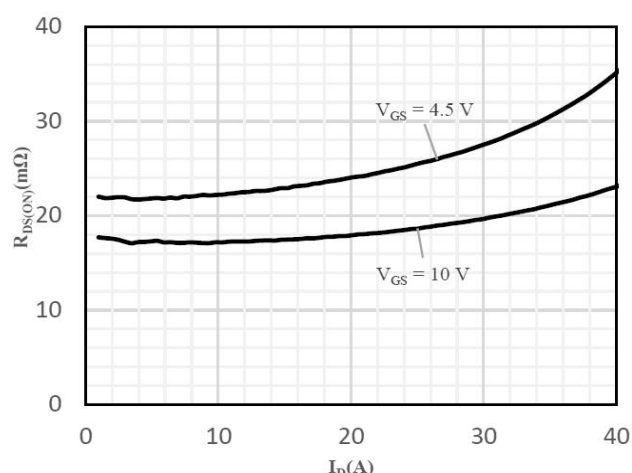


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

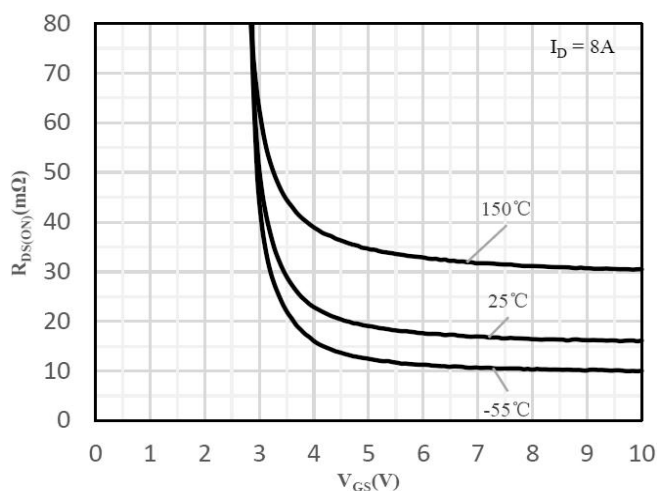


Fig 5 On-Resistance vs. Gate-Source Voltage

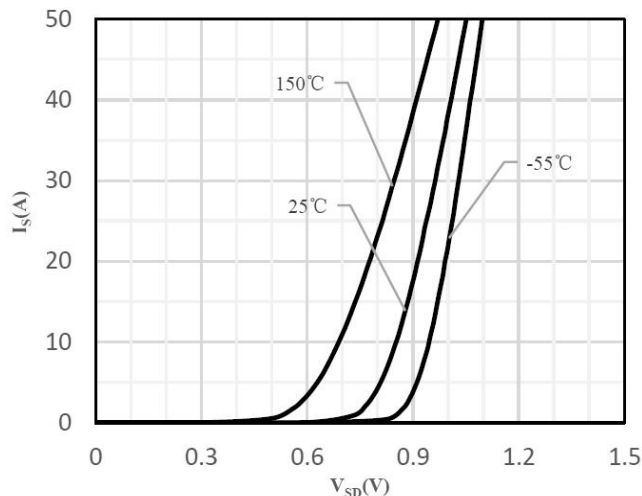


Fig 6 Body-Diode Characteristics

Typical Characteristics

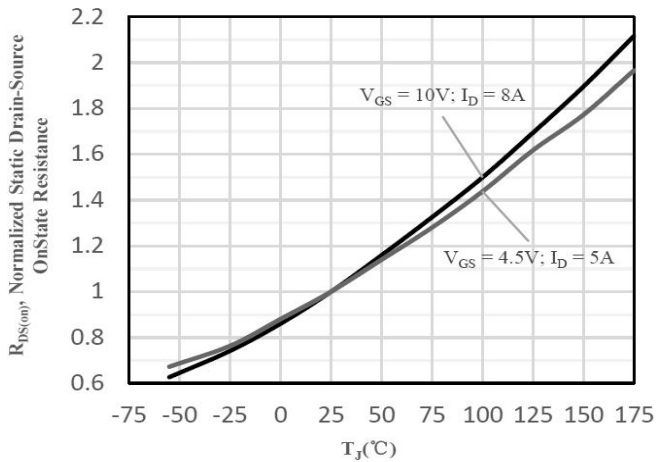


Fig 7 Normalized On-Resistance vs. Junction Temperature

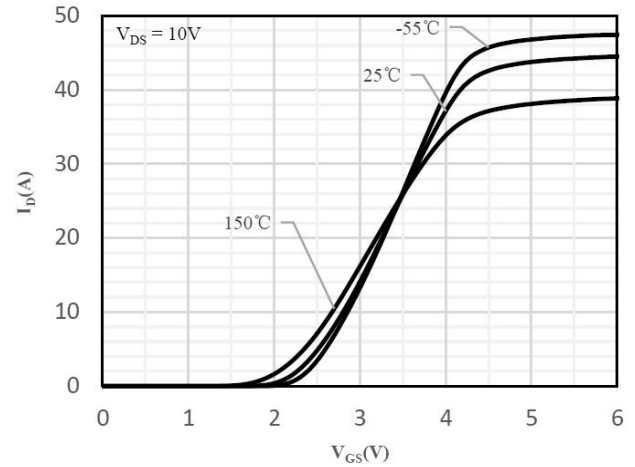


Fig 8 Transfer Characteristics

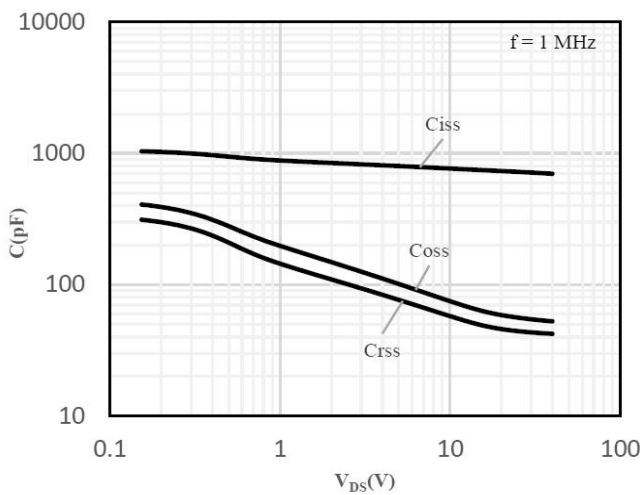


Fig 9 Capacitance Characteristics

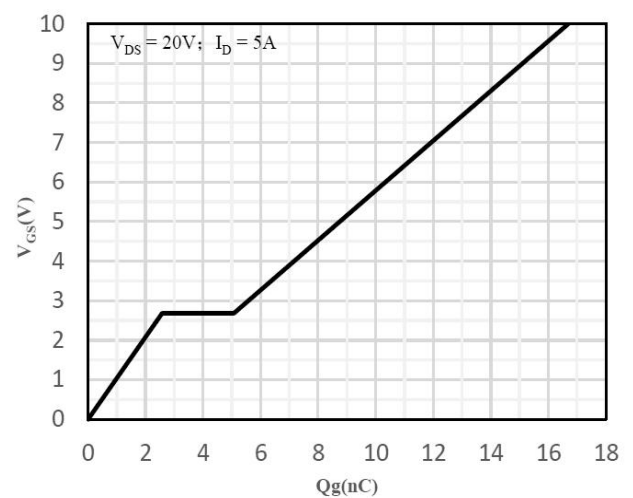


Fig 10 Gate-Charge Characteristics

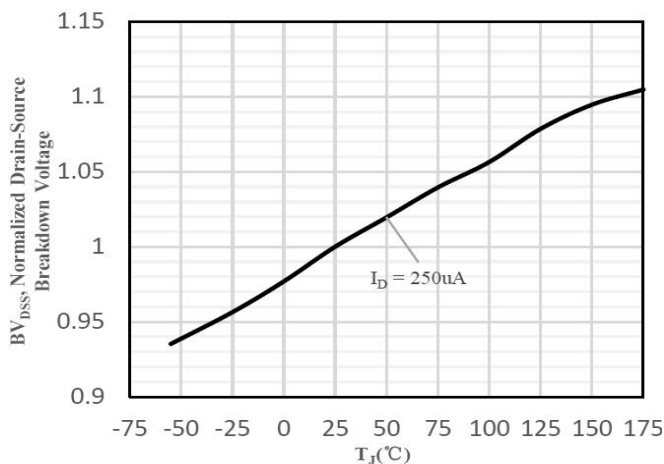


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

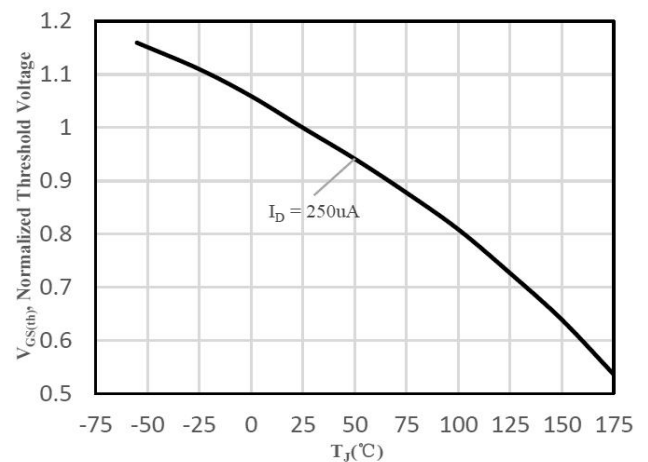


Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature

Typical Characteristics

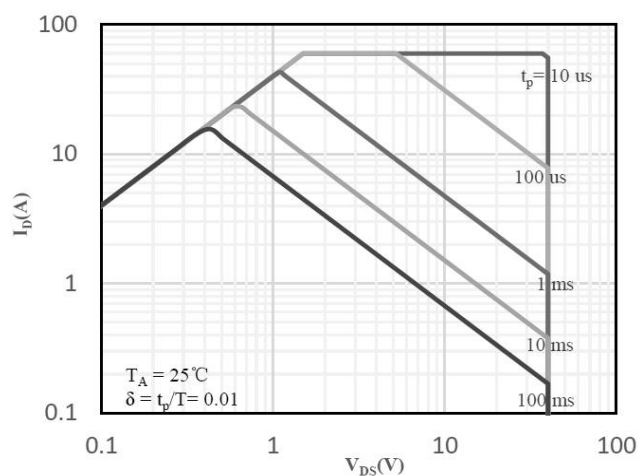


Fig 13 Safe Operation Area

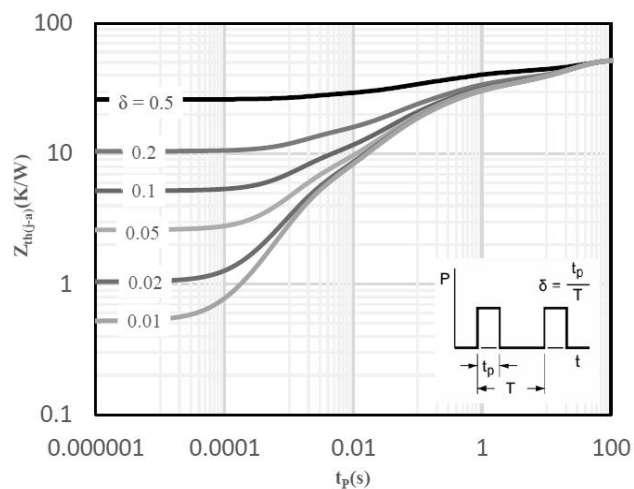
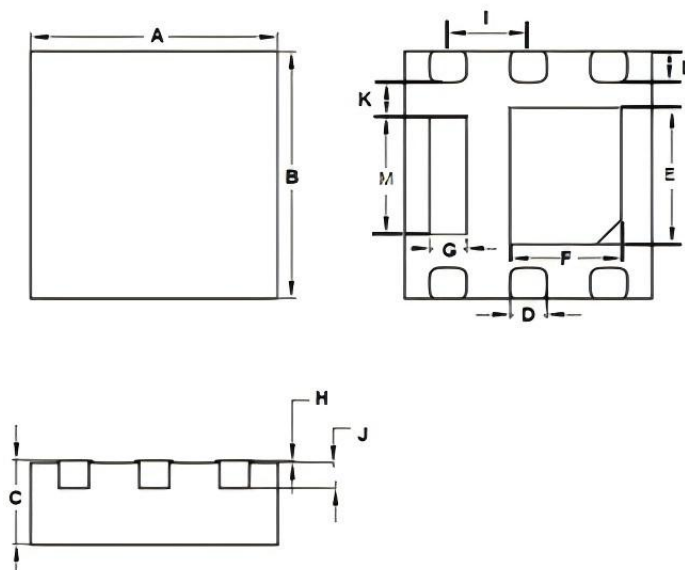


Fig 14 Maximum transient thermal impedance

DFN2*2-6L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.924	2.076	0.076	0.082
B	1.924	2.076	0.076	0.082
C	0.500	0.600	0.020	0.024
D	0.250	0.350	0.010	0.014
E	0.900	1.100	0.035	0.043
F	0.850	1.050	0.033	0.041
G	0.200	0.400	0.008	0.016
H	0.000	0.050	0.000	0.002
I	0.550	0.750	0.022	0.030
J	0.103	0.303	0.004	0.012
K	0.150	0.350	0.006	0.014
L	0.200	0.400	0.008	0.016
M	0.700	0.900	0.028	0.035