

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-20V	0.48Ω@-4.5V	-0.78A
	0.67Ω@-2.5V	
	2.2Ω@-1.8V	

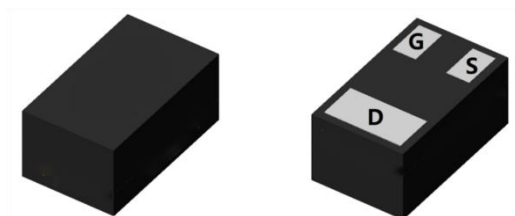
Feature

- Advanced trench technology
- Low On-Resistance
- Low gate threshold voltage
- Low input capacitance
- Fast switching speed
- ESD Protected

Application

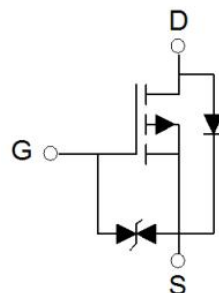
- Battery switch
- DC/DC Converter

Package

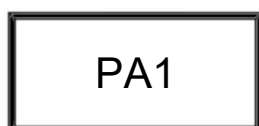


DFN1006-3L

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}	± 12	V
Continuous Drain Current ¹⁾	I_D	-0.78	A
Continuous Drain Current ¹⁾ ($T_A=70^{\circ}\text{C}$)	$I_D (70^{\circ}\text{C})$	-0.62	A
Pulsed Drain Current ($t_p = 10\mu\text{s}$)	I_{DM}	-4.9	A
Single Pulse Avalanche Energy ³⁾	E_{AS}	0.5	mJ
Power Dissipation ¹⁾	P_D	0.15	W
Thermal Resistance Junction to Ambient ¹⁾	$R_{\theta JA}$	834	$^{\circ}\text{C}/\text{W}$
Operating Junction Temperature	T_J	-55 ~ +150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

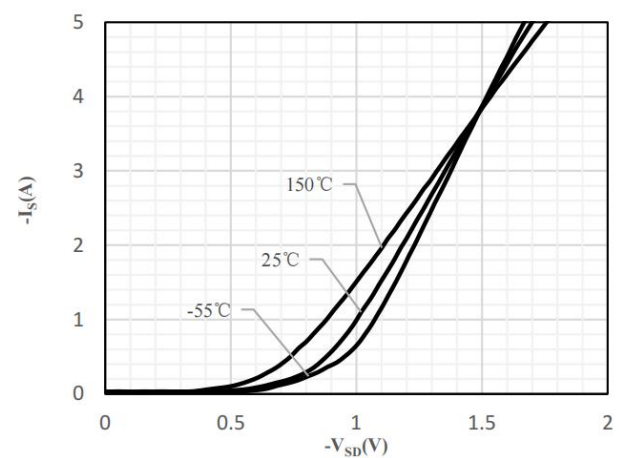
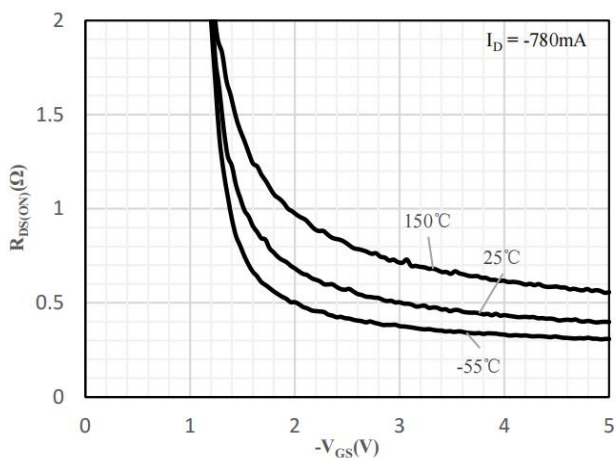
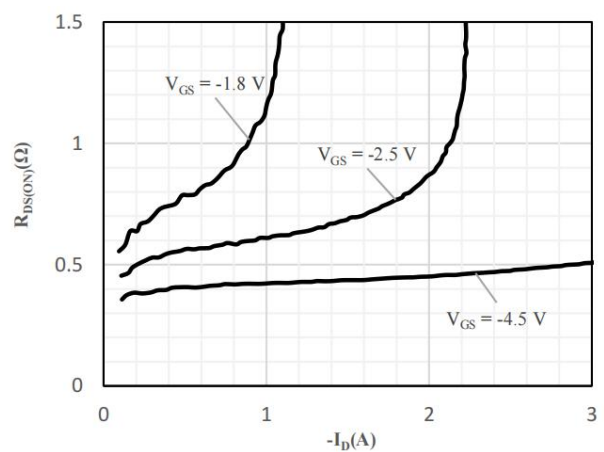
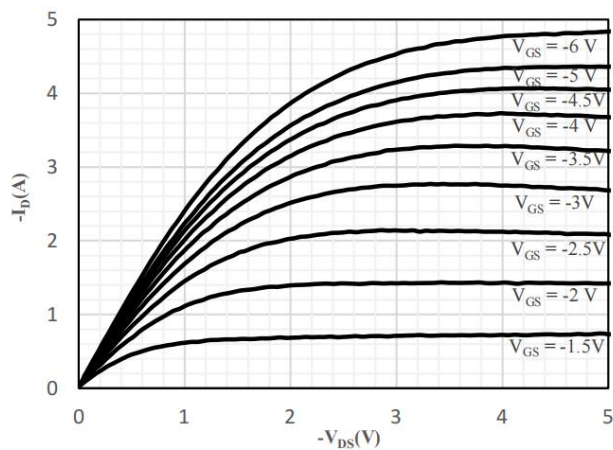
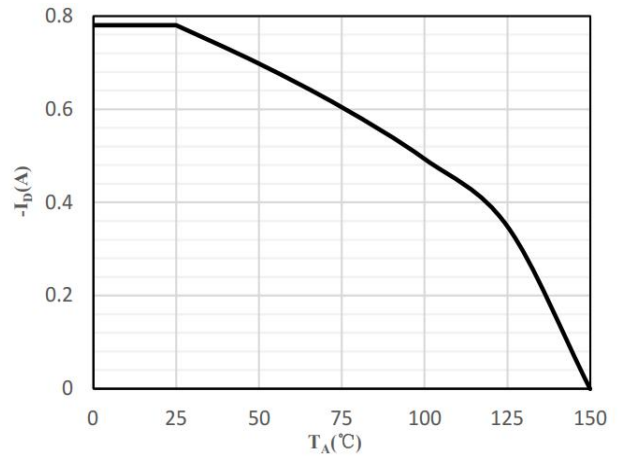
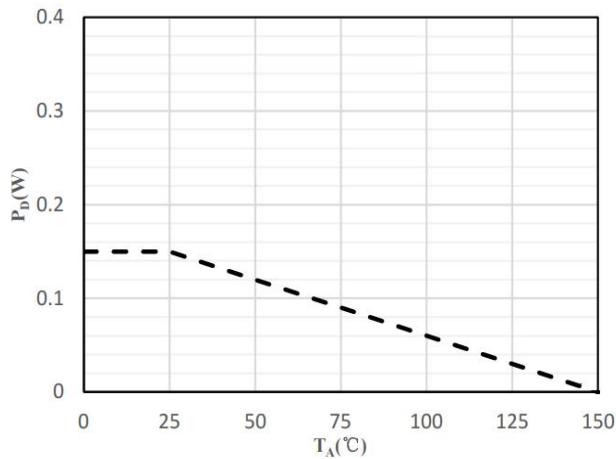
Electrical characteristics ($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =-250μA	-20			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V			-1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±4.5V			±10	μA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.45	-0.6	-1.2	V
Drain-source on-resistance ²⁾	R _{DS(on)}	V _{GS} =-4.5V, I _D =-0.78A		0.4	0.48	Ω
		V _{GS} =-2.5V, I _D =-0.66A		0.6	0.67	
		V _{GS} =-1.8V, I _D =-0.1A		0.75	2.2	
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =-16V, V _{GS} =0V, f =1MHz		76		pF
Output Capacitance	C _{oss}			13		
Reverse Transfer Capacitance	C _{rss}			10		
Total Gate Charge	Q _g	V _{DS} =-16V, V _{GS} =-4.5V I _D =-0.2A		2.6		nC
Gate-Source Charge	Q _{gs}			0.57		
Gate-Drain Charge	Q _{gd}			0.34		
Turn-on delay time	t _{d(on)}	V _{DS} =-10V, V _{GS} =-4.5V R _G =3Ω		8		nS
Turn-on rise time	t _r			5.5		
Turn-off delay time	t _{d(off)}			30		
Turn-off fall time	t _f			17		
Source-Drain Diode characteristics						
Diode Continuous Current	I _S				-0.78	A
Diode Forward voltage ²⁾	V _{SD}	V _{GS} =0V, I _S =-0.35A			-1.2	V

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2) The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- 3) The EAS data shows Max. rating. The test condition is $V_{DD} = -15\text{V}$, $V_{GS} = -5\text{V}$, $L = 0.1\text{mH}$.
- 4) Guaranteed by design, not subject to production testing.

Typical Characteristics



Typical Characteristics

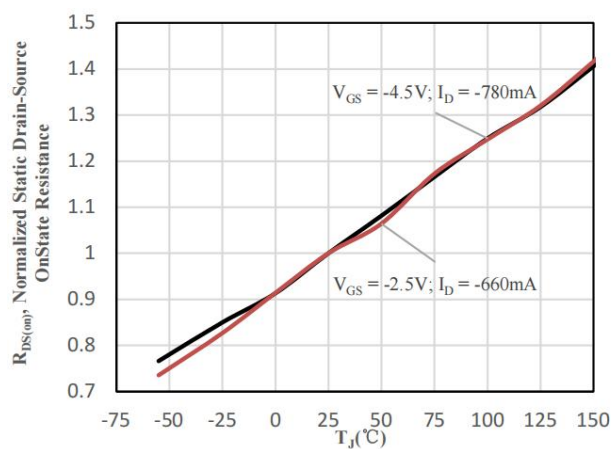


Fig 7 Normalized On-Resistance vs. Junction Temperature

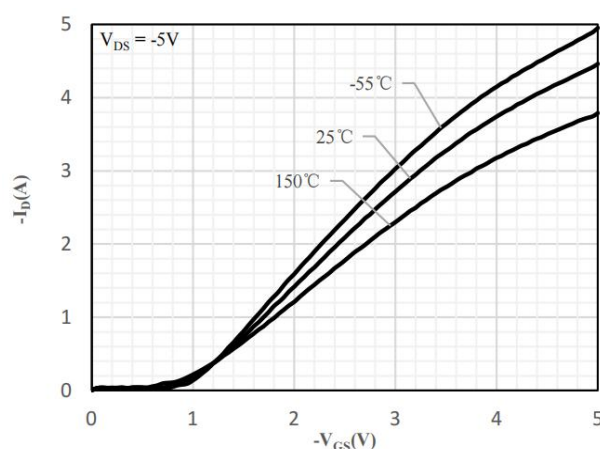


Fig 8 Transfer Characteristics

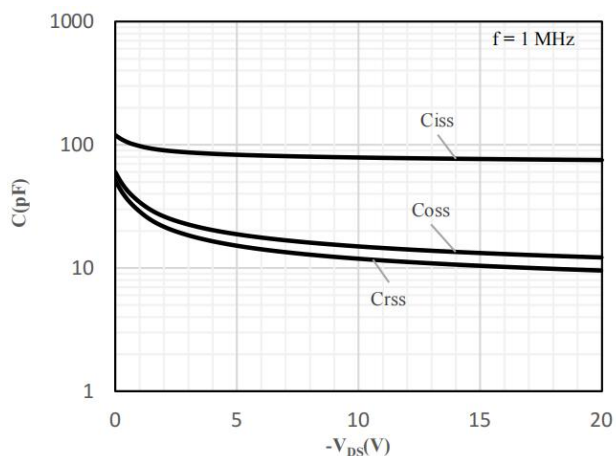


Fig 9 Capacitance Characteristics

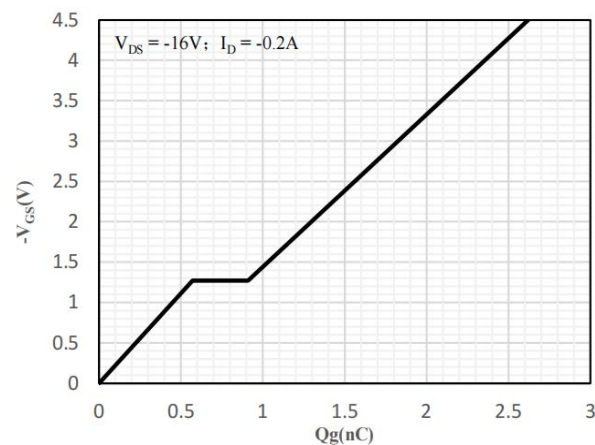


Fig 10 Gate-Charge Characteristics

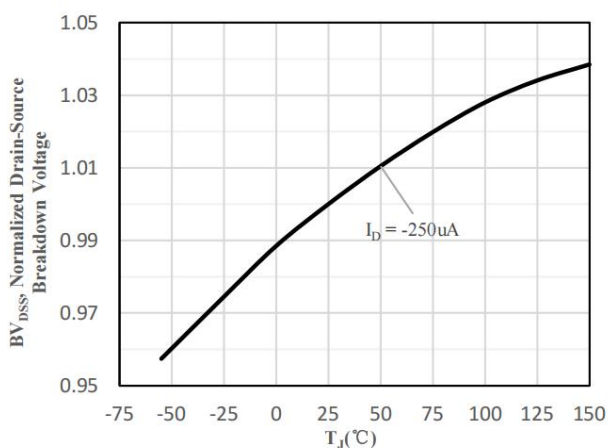


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

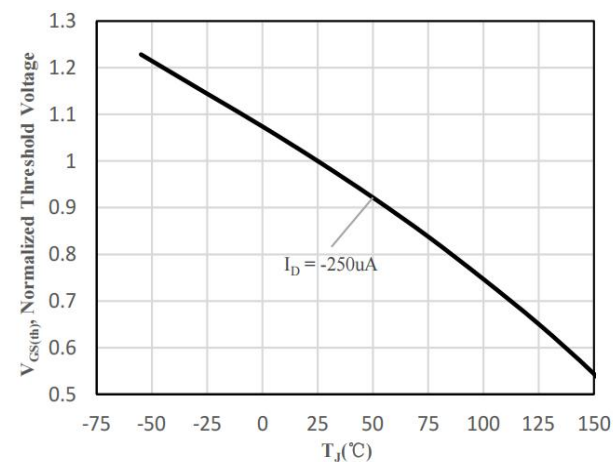
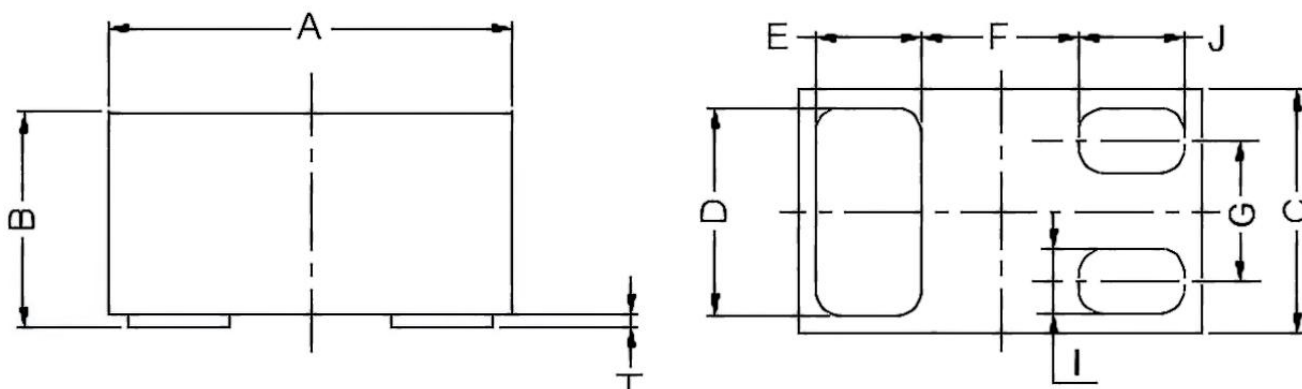


Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature

DFN1006-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.950	1.075	0.037	0.042
B	0.470	0.530	0.019	0.021
C	0.550	0.675	0.022	0.027
D	0.450	0.550	0.018	0.022
E/J	0.200	0.300	0.008	0.012
F	0.400 BSC		0.016 BSC	
G	0.350 BSC		0.014 BSC	
H	0.000	0.050	0.000	0.002
I	0.100	0.200	0.004	0.008