

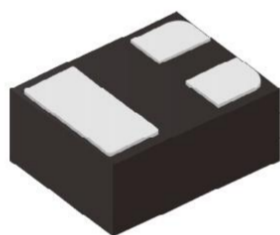
Product Summary

- V_{DS} -20 V
- I_{DS} (@ $V_{GS} = -4.5V$) -2.5 A
- $R_{DS(ON)}$ (@ $V_{GS} = -4.5V$) <92m Ω (Typ)

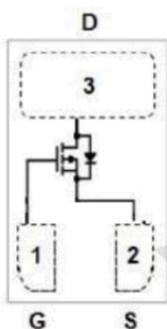
Application

- Reverse Battery protection
- Load switch
- Power management
- PWM Application

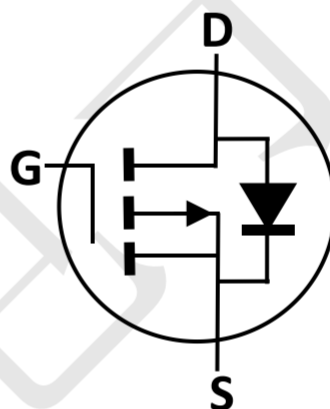
Package and Pin Configuration



DFN1006-3



Circuit diagram



Equivalent Circuit

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

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	-2.5	A
Pulsed Drain Current (note1)	I_{DM}	-6.0	A
Maximum Power Dissipation	P_D	0.5	W
Operating Junction Temperature Range	T_J	-55 to +150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$

Thermal Characteristic

PARAMETER	Symbol	Value	Unit
Thermal Resistance from Junction to Ambient($t \leq 10s$)	$R_{\theta JA}$	250	$^\circ\text{C/W}$

notes 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. When mounted on 1" square PCB (FR4 material).

Electrical Characteristics (T_A=25°C unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Static						
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	BV_{DSS}	-20	--	--	V
Gate-Source Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-0.4	-0.7	-1.0	V
Gate-Source Leakage	$V_{DS}=0V, V_{GS}=\pm 12V$	I_{GSS}	--	--	± 100	nA
Zero Gate Voltage Drain Current	$V_{DS}=-20V, V_{GS}=0V$	I_{DSS}	--	-0.1	-1	μA
	$V_{DS}=-20V, T_J=125^{\circ}C$		--	-10	-50	μA
Drain-Source On-State Resistance (Note 1)	$V_{GS}=-4.5V, I_D=-1.0A$	$R_{DS(on)}$	--	92	120	m Ω
	$V_{GS}=-2.5V, I_D=-1.0A$		--	115	160	
Dynamic (Note 2)						
Total Gate Charge (Note 3)	$V_{DS}=-20V,$ $I_D=-0.1A,$ $V_{GS}=-4.5V$	Q_g	--	3.0	--	nC
Gate-Source Charge (Note 3)		Q_{gs}	--	0.2	--	
Gate-Drain Charge (Note 3)		Q_{gd}	--	0.8	--	
Input Capacitance	$V_{DS}=-20V,$ $V_{GS}=0V,$ $F=1.0MHz$	C_{iss}	--	248	--	pF
Output Capacitance		C_{oss}	--	31	--	
Reverse Transfer Capacitance		C_{rss}	--	29	--	
Switching						
Turn-On Delay Time (Note 3)	$V_{DD}=-20V,$ $I_D=-0.1A,$ $V_{GS}=-4.5V,$ $R_{GEN}=6\Omega$	$t_{d(on)}$	--	5.0	--	nS
Rise Time (Note 3)		t_r	--	5.0	--	
Turn-Off Delay Time (Note 3)		$t_{d(off)}$	--	54	--	
Fall Time (Note 3)		t_f	--	35	--	
Source-Drain Diode Ratings and Characteristics (Note 2)						
Forward Voltage	$V_{GS}=0V, I_{SD}=-1.0A$	V_{SD}	--	-0.96	-1.2	V
Continuous Source Current	Integral reverse diode in the MOSFET	I_S	--	--	-2.5	A
Pulsed Current (Note 1)		I_{SM}	--	--	-6.0	A

Notes:

1. Pulse test; pulse width ≤ 300 μS, duty cycle ≤ 2%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)

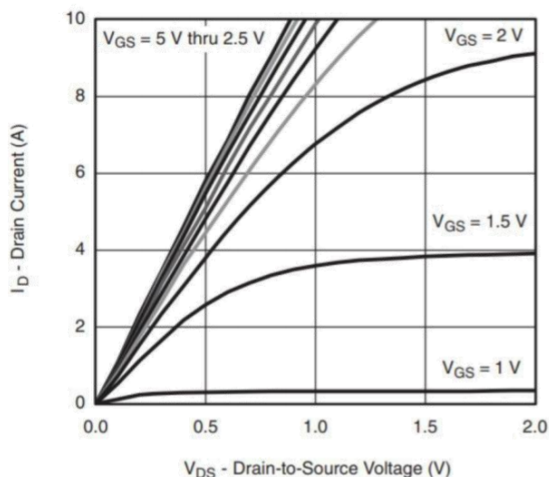


Fig.1 Typical Output Characteristics

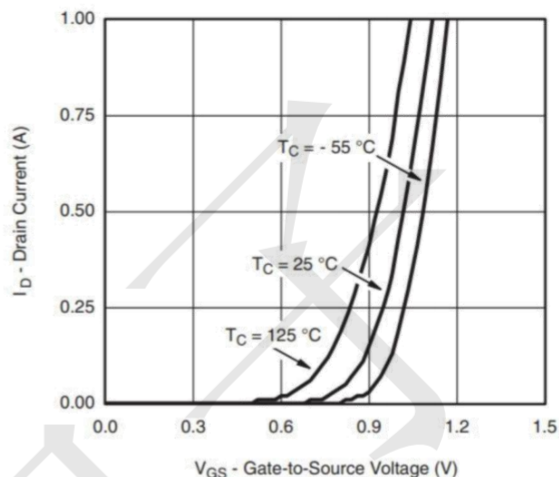


Fig.2 Transfer Characteristics

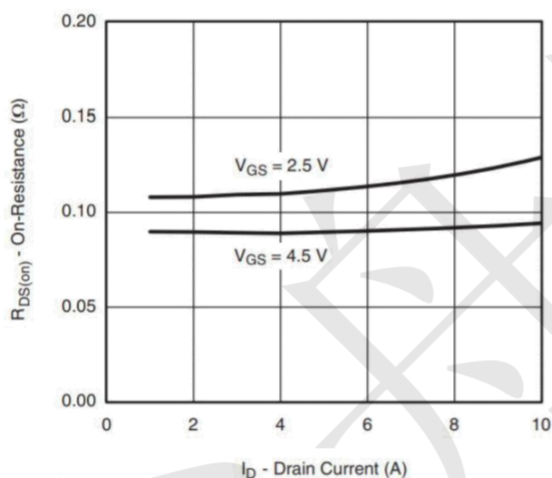


Fig.3 On-Resistance vs Drain Current & Gate Voltage

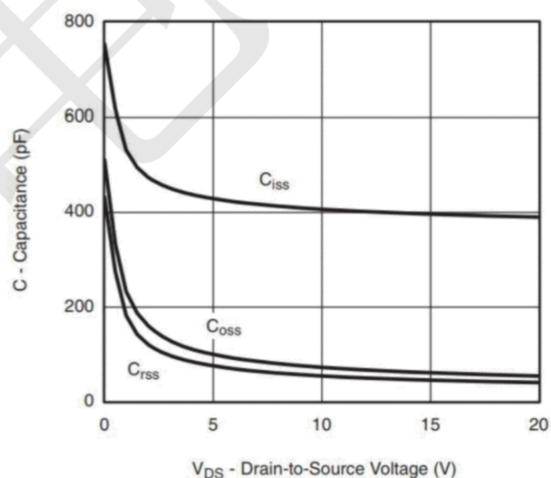


Fig.4 Capacitance Characteristics

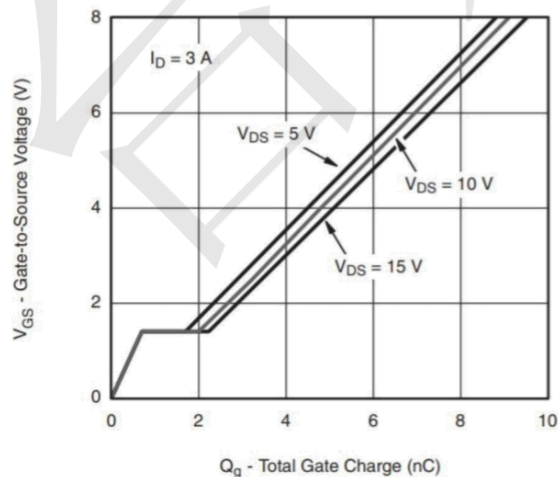


Fig.5 Gate Charge Characteristics

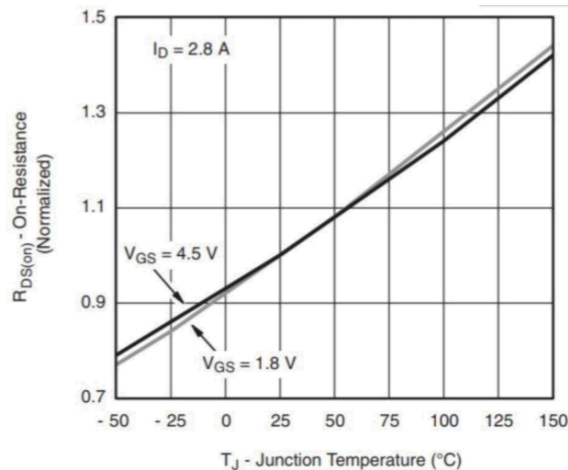
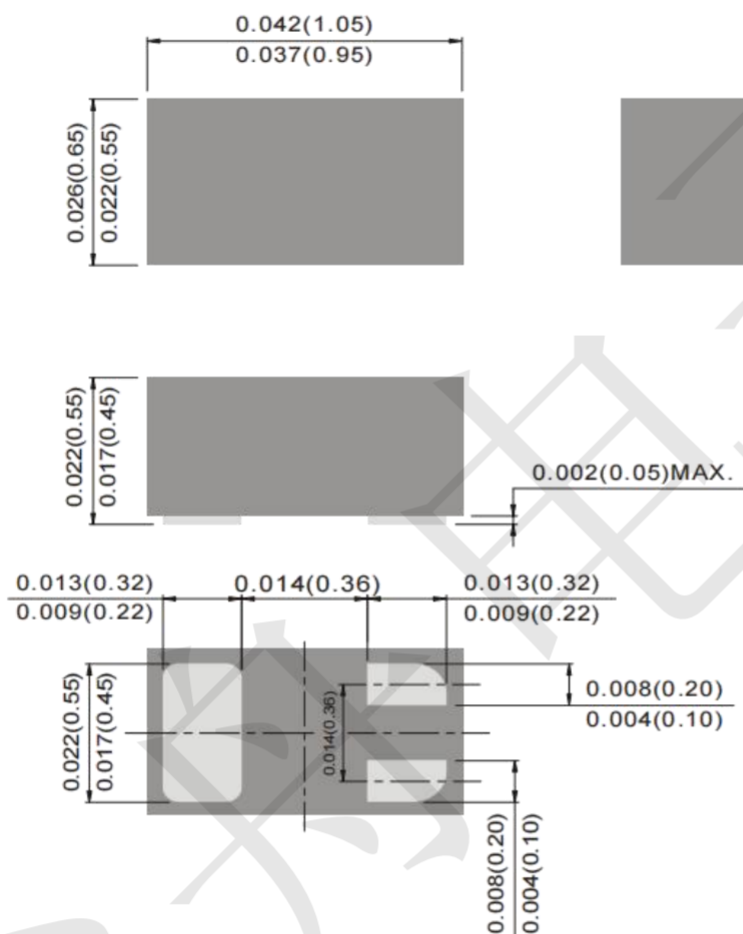


Fig.6 On-Resistance vs Junction Temperature

Package Information

DFN1006-3



Pad Layout Unit: inch(mm)

