

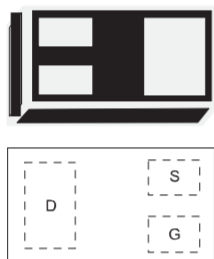
Features

BV_{DSS}	30V
$R_{DS(ON)}$	450mΩ
I_D	800mA

Application

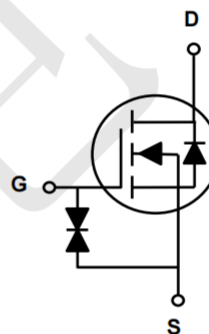
- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable Electronics
- Logic Level Shift

Package and Pin Configuration



DFN1006-3L

Circuit diagram



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

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous($T_C=25^\circ\text{C}$)	I_D	800	mA
Drain Current-Pulsed ¹	I_{DM}	2100	mA
Power Dissipation($T_C=25^\circ\text{C}$)	P_D	155	mW
Power Dissipation-Derate Above 25°C		1.25	mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	800	$^\circ\text{C/W}$
Storage Temperature Range	T_{STG}	-55 To +150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-55 To +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	30	-	-	V
BV _{DSS} Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =1mA	-	-0.03	-	V/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30V , V _{GS} =0V, T _J =25°C	-	-	1	μA
		V _{DS} =24V , V _{GS} =0V, T _J =125°C	-	-	10	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	-	-	±20	μA
On Characteristics						
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =0.5A	-	350	450	mΩ
		V _{GS} =2.5V, I _D =0.5A	-	450	650	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.5	0.8	1.2	V
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)}		-	-1.74	-	mV/°C
Forward Transconductance	g _{FS}	V _{DS} =4V, I _D =0.3A	-	1	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q _g	V _{DS} =15V, I _D =0.3A, V _{GS} =4.5V	-	2.6	5.2	nC
Gate-Source Charge ^{2,3}	Q _{gs}		-	0.9	1.8	
Gate-Drain Charge ^{2,3}	Q _{gd}		-	0.6	1.2	
Turn-On Delay Time ^{2,3}	t _{d(on)}	V _{DD} =15V, R _G =10Ω V _{GS} =4.5V, I _D =0.3A	-	5.5	11	nS
Rise Time ^{2,3}	t _r		-	4	8	
Turn-Off Delay Time ^{2,3}	t _{d(off)}		-	14.5	29	
Fall Time ^{2,3}	t _f		-	6.5	13	
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, F=1MHz	-	72.9	146	PF
Output Capacitance	C _{oss}		-	18.3	36.6	
Reverse Transfer Capacitance	C _{rss}		-	7.4	14.8	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	-	-	400	mA
Pulsed Source Current	I _{SM}		-	-	800	
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =0.2A, T _J =25°C	-	-	1	V
Reverse Recovery Time	T _{rr}	V _{GS} =0V, I _S =0.3A, d _i /d _t =100A/μs, T _J =25°C	-	13	-	nS
Reverse Recovery Charge	Q _{rr}		-	6	-	nC

Typical Electrical and Thermal Characteristic Curves

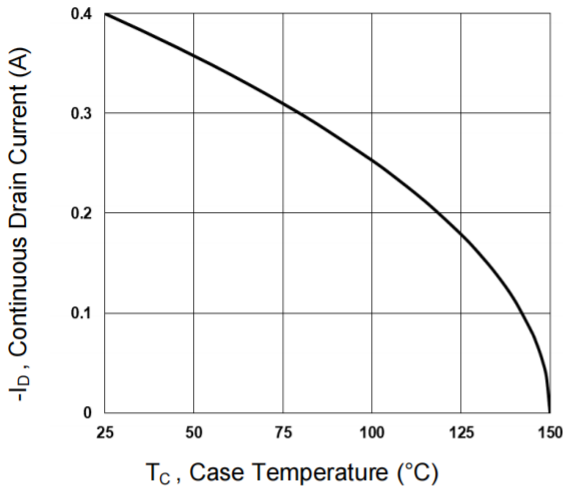


Figure 1. Continuous Drain Current vs. T_C

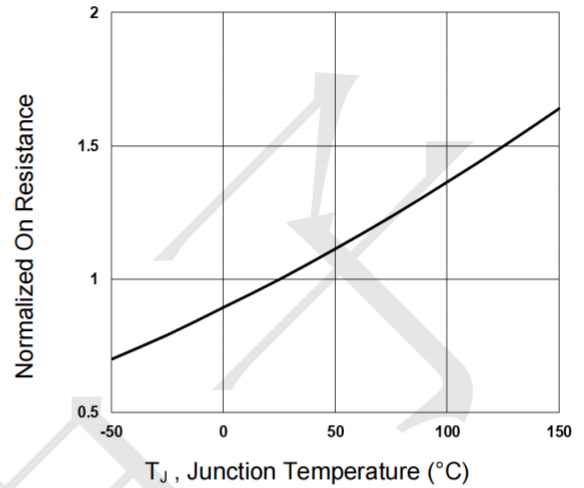


Figure 2. Normalized $R_{DS(on)}$ vs. T_J

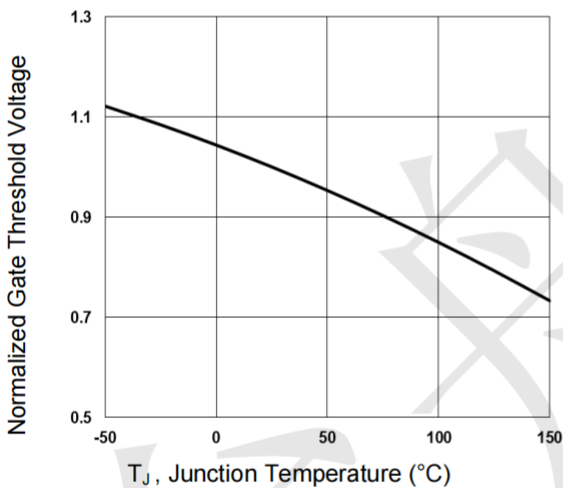


Figure 3. Normalized V_{th} vs. T_J

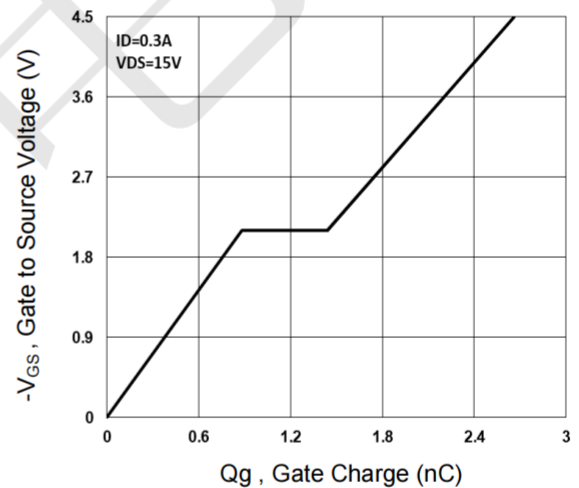


Figure 4. Gate Charge Waveform

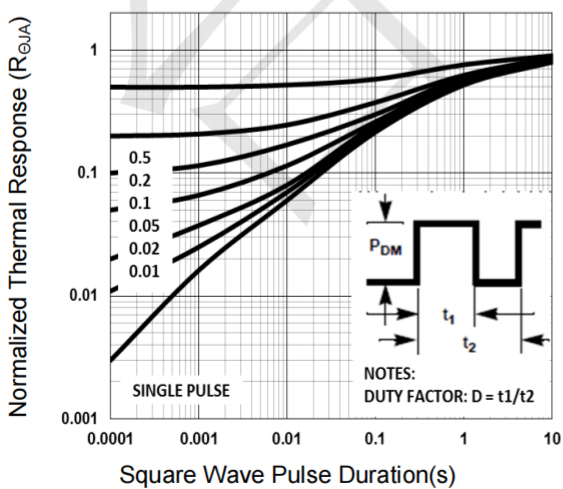


Figure 5. Normalized Transient Response

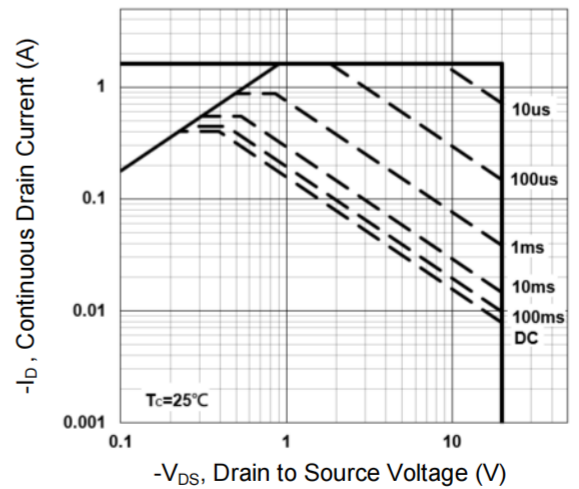


Figure 6. Maximum Safe Operation Area

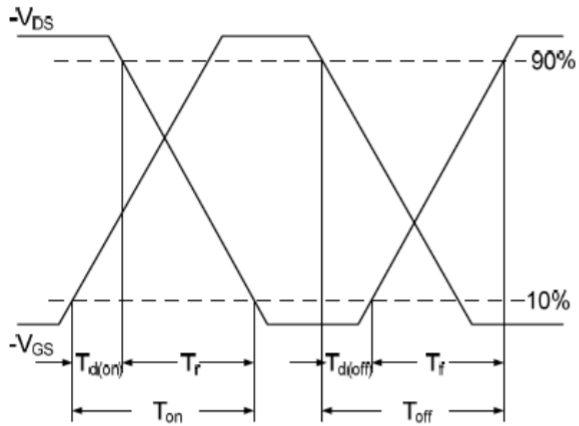


Figure 7. Switching Time Waveform

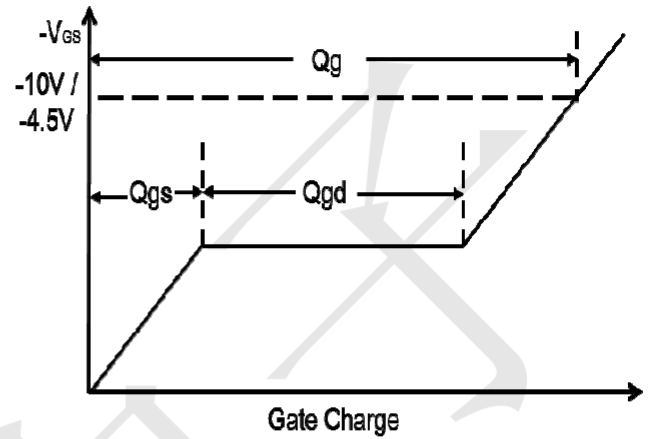
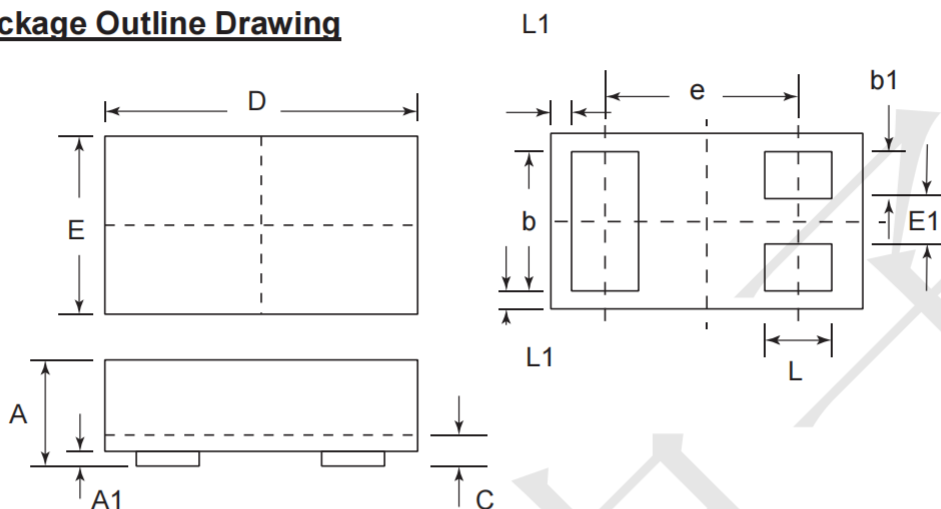


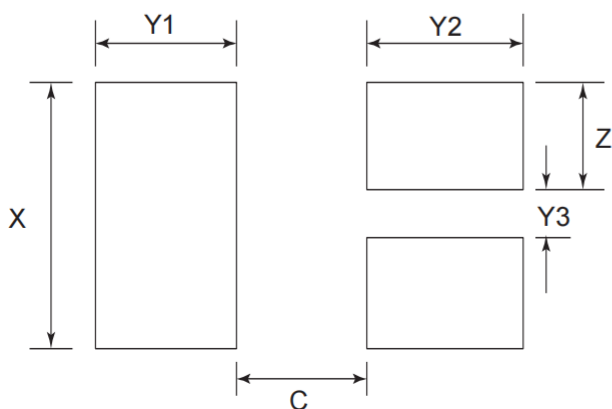
Figure 8. Gate Charge Waveform

DFN1006-3L Package Outline Drawing



SYM	DIMENSIONS					
	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.02	0.05	0.000	0.001	0.002
b	0.45	0.50	0.55	0.018	0.020	0.022
b1	0.10	0.15	0.20	0.004	0.006	0.008
C	0.12	0.15	0.18	0.005	0.006	0.007
D	0.95	1.00	1.05	0.037	0.039	0.041
e	0.65 BSC			0.026 BSC		
E	0.55	0.60	0.65	0.022	0.024	0.026
E1	0.15	0.20	0.25	0.006	0.008	0.010
L	0.20	0.25	0.30	0.008	0.010	0.012
L1	0.05 REF			0.0002 REF		

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	0.25	0.010
X	0.65	0.024
Y1	0.50	0.020
Y2	0.50	0.020
Y3	0.25	0.010
Z	0.20	0.008