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DMN3730UFB

N-Channel Enhancement Mode MOSFET

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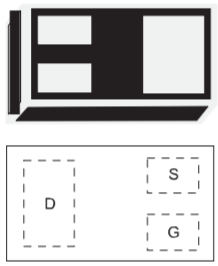
Features

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

Application

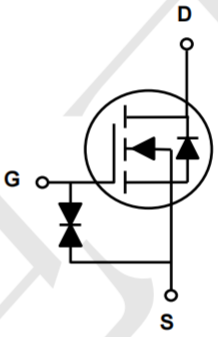
- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable Electronics
- Logic Level Shift

Package and Pin Configuration



DFN1006-3L

Circuit diagram



Marking:35

Absolute Maximum Ratings (T_A=25°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°C)	I	800	mA
Drain Current-Pulsed[1]	I_{DM}	2100	mA
Power Dissipation(T_C=25°C)	P_D	155	mW
Power Dissipation-Derate Above 25°C		1.25	mW/°C
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	800	°C/W
Storage Temperature Range	T_{STG}	-55 To +150	°C
Operating Junction Temperature Range	T_J	-55 To +150	°C

Electrical Characteristics (T_A = 25°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	$\triangle BV_{DSS}/\triangle T_J$	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	$\triangle V_{GS(th)}$		-	-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_{lss}	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

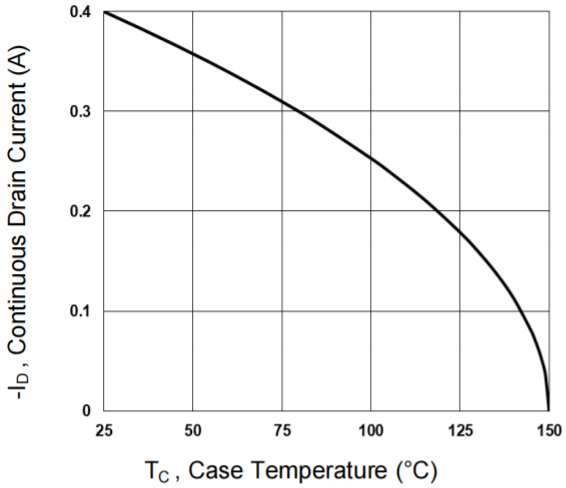


Figure 1. Continuous Drain Current vs. T_C

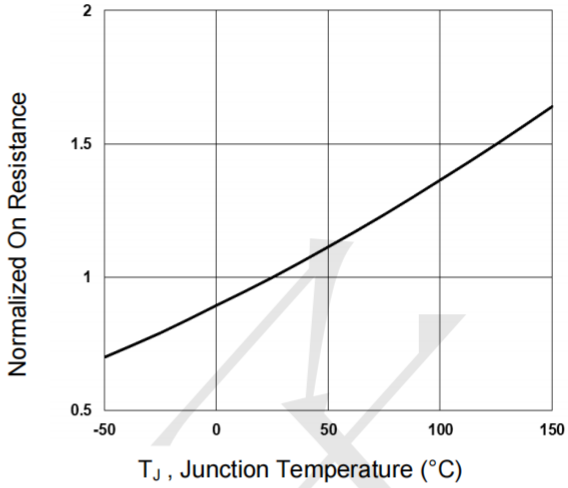


Figure 2. Normalized R_{DSON} vs. T_J

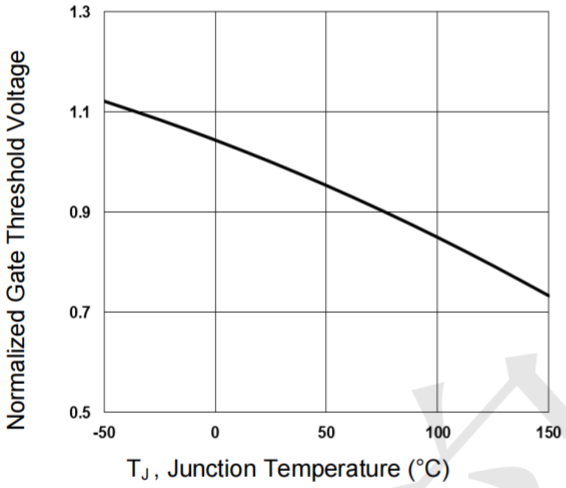


Figure 3. Normalized V_{th} vs. T_J

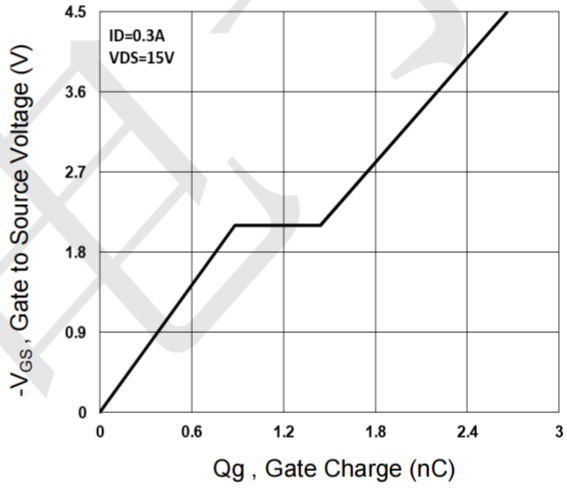


Figure 4. Gate Charge Waveform

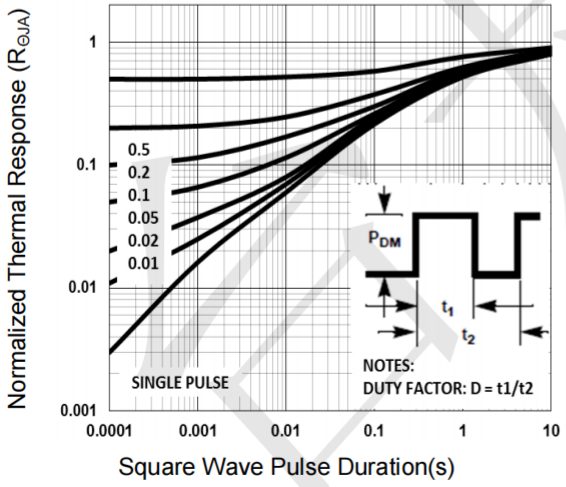


Figure 5. Normalized Transient Response

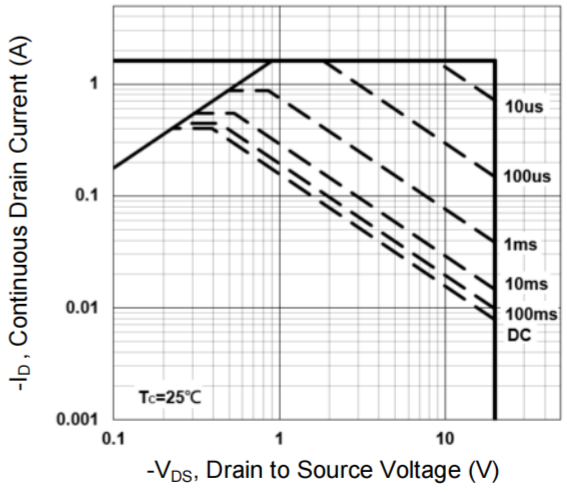
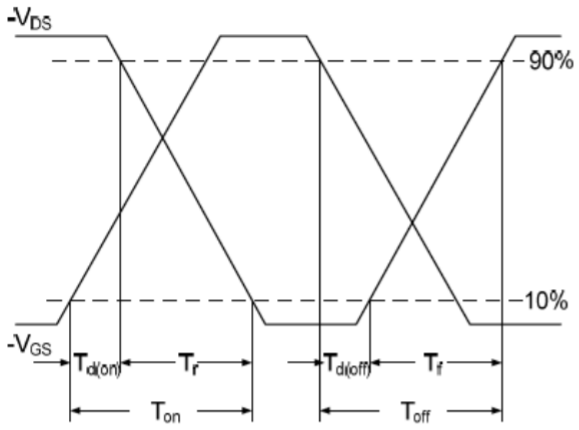
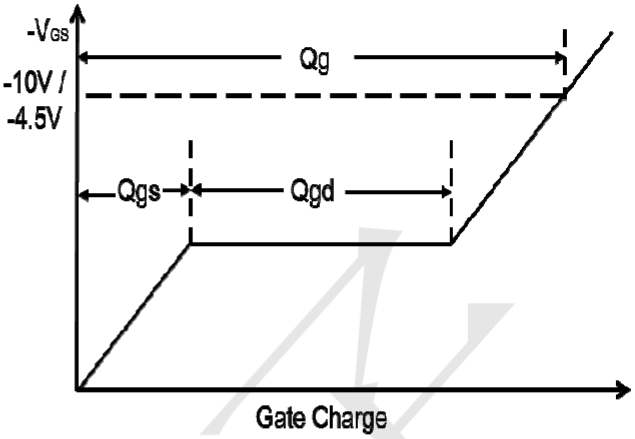


Figure 6. Maximum Safe Operation Area

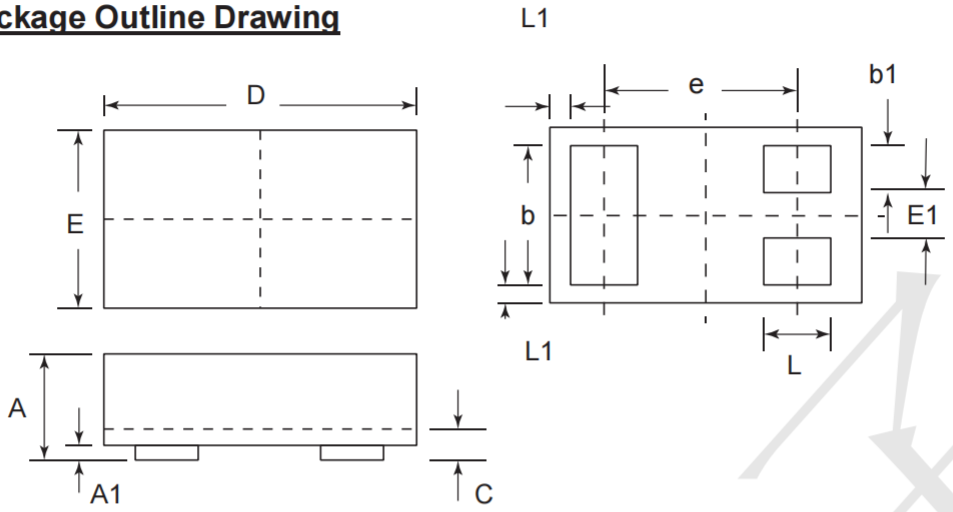


Firgure 7. Switching Time Waveform



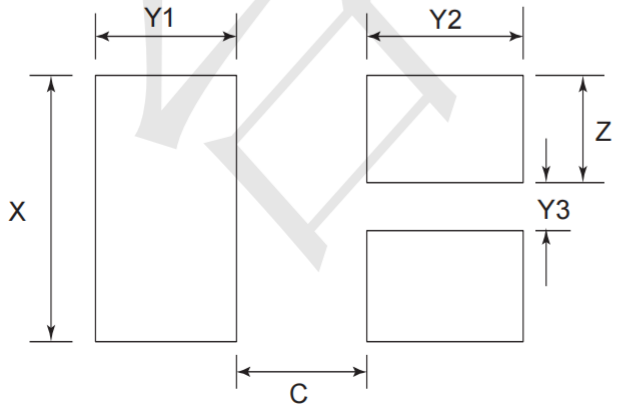
Firgure 8. Gate Charge Waveform

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