

FH38P03G6

P-Channel Enhancement Mode MOSFET

Description

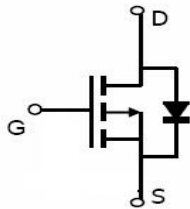
The FH38P03G6 is the P-Channel enhancement mode MOSFET in a plastic package (PDFN3.3x3.3-8L) using the Trench technology.

Applications

- ◆ High Speed Switch
- ◆ DC-DC Converters
- ◆ Lithium-Ion Battery

Features

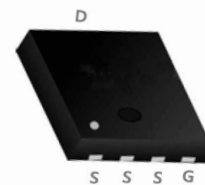
- ◆ $V_{DS} = -30V$; $I_D = -38A$
- $R_{DS(ON)}(Typ.) = 8.5 m\Omega$ @ $V_{GS} = -10V$
- $R_{DS(ON)}(Typ.) = 11 m\Omega$ @ $V_{GS} = -4.5V$
- ◆ LogicLevelCompatible
- ◆ SMD Package (PDFN3.3x3.3-8L)
- ◆ Trench Technology
- ◆ Fast Switching



Schematic diagram



Marking and Pin Assignment



PDFN3.3x3.3-8L top view

■ Absolute Maximum Ratings ($T_A = 25^\circ C$, unless otherwise specified)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_C = 25^\circ C$)	I_D	-38	A
Pulsed Drain Current (Note 3)	I_{DM}	-100	A
Power Dissipation	P_D	31	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ C$
Thermal Resistance-Junction to Ambient (Note 1)	R_{thJA}	80	$^\circ C/W$

■ Electrical Characteristics (T_A = 25°C, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = -250μA	-30	-34	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.1	-1.5	-1.9	V
Gate-Body Leakage Current	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -30V, V _{GS} = 0V	-	-	-1	μA
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -10A	-	8.5	11	mΩ
		V _{GS} = -4.5V, I _D = -8.0A	-	11	14	
Forward Transconductance	g _{FS}	V _{DS} = -5V, I _D = -5.0A	-	15		S
Diode Forward Voltage (Note 2)	V _{SD}	V _{GS} = 0V, I _S = -1.0A	-	-	-1.2	V
Diode Forward Current (Note 1)	I _S		-	-	-10	A
Dynamic						
Total Gate Charge	Q _g	V _{DS} = -15V, V _{GS} = -10V, I _D = -1A	-	45	-	nC
Gate-Source Charge	Q _{gs}		-	5	-	
Gate-Drain Charge	Q _{gd}		-	4	-	
Input Capacitance	C _{iss}	V _{DS} = -15V, V _{GS} = 0V, f = 1MHz	-	1970	-	pF
Output Capacitance	C _{oss}		-	250	-	
Reverse Transfer Capacitance	C _{rss}		-	164	-	
Switching						
Turn-On Delay Time	t _{d(on)}	V _{DD} = -15V, R _L = 15Ω, I _D = -1A, V _{GS} = -4.5V, R _{GEN} = 10Ω	-	9	-	nS
Rise Time	t _r		-	5	-	
Turn-Off Delay Time	t _{d(off)}		-	38	-	
Fall-Time	t _f		-	11	-	

- Note:**
1. Mounted on FR4 board, t ≤ 5sec.
 2. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
 3. Repetitive Rating: Pulse width limited by maximum junction temperature.

■ Typical Electrical and Thermal Characteristics

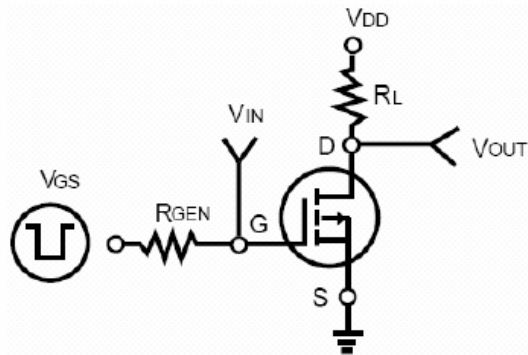


Figure 1: Switching Test Circuit

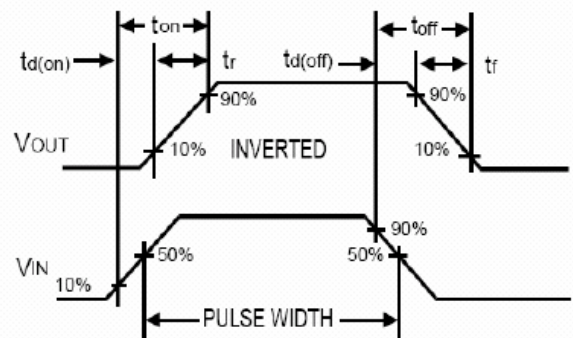


Figure 2: Switching Waveforms

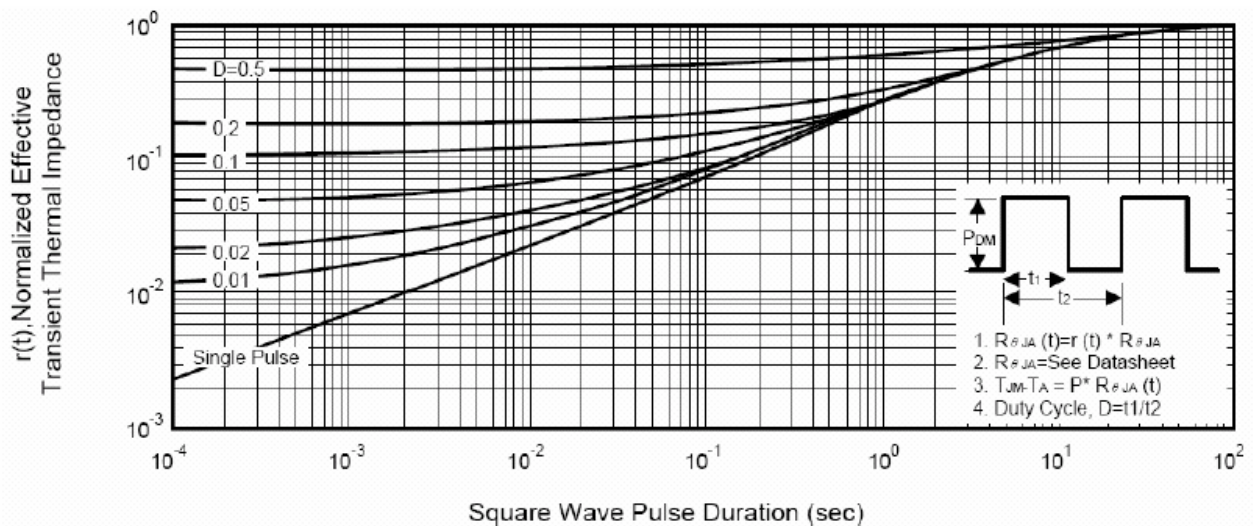
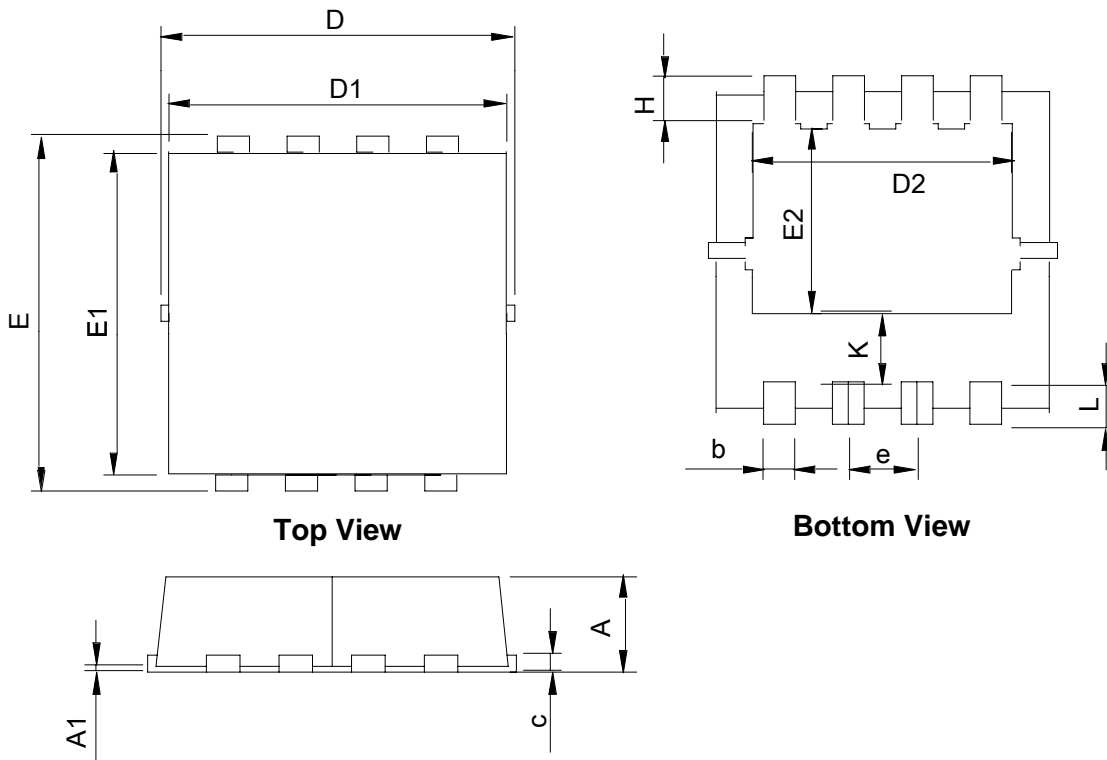


Figure 3: Normalized Maximum Transient Thermal Impedance

■ Package Dimensions : PDFN3.3x3.3-8L



SYMBOL	PDFN3.3x3.3-8L			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	1.00	0.028	0.039
A1	0.00	0.05	0.000	0.002
b	0.25	0.35	0.010	0.014
c	0.14	0.20	0.006	0.008
D	3.10	3.50	0.122	0.138
D1	3.05	3.25	0.120	0.128
D2	2.35	2.55	0.093	0.100
E	3.10	3.50	0.122	0.138
E1	2.90	3.10	0.114	0.122
E2	1.64	1.84	0.065	0.072
e	0.65 BSC		0.026 BSC	
H	0.32	0.52	0.013	0.020
K	0.59	0.79	0.023	0.031
L	0.25	0.55	0.010	0.022

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