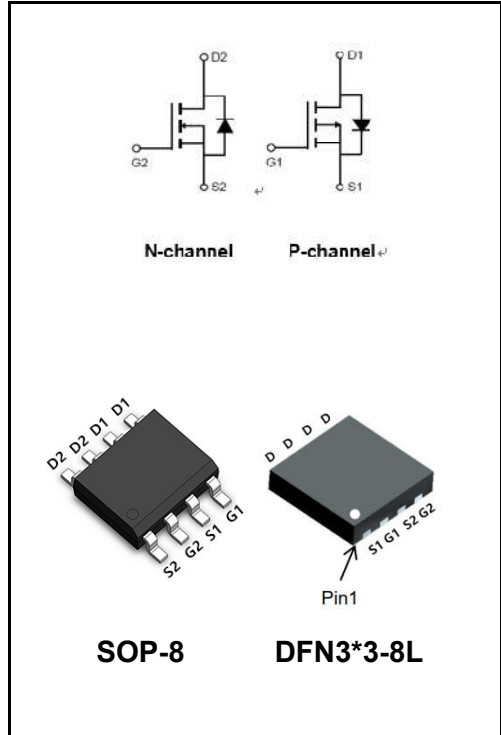


30V N+P-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

I_D	8A
V_{DSS}	30V
$R_{DS(on)-typ}(@V_{GS}=10V)$	< 20mΩ (Type:18 mΩ)
I_D	-6.2A
V_{DSS}	-30V
$R_{DS(on)-typ}(@V_{GS}=-10V)$	< -50mΩ (Type:43 mΩ)



Application

- ◆ Power switching application
- ◆ Hard Switched and High Frequency Circuits
- ◆ Uninterruptible Power Supply

Product Specification Classification

Part Number	Package	Marking	Pack
YFW5G03S	SOP-8	YFW 5G03S XXXX	3000PCS/Tape
YFW5G03DF	DFN3*3-8L	YFW 5G03DF XXXX	5000PCS/Tape

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value		Units
		N-Ch	P-Ch	
Drain-Source Voltage	V_{DS}	30	-30	V
Gate - Source Voltage	V_{GS}	±20	±20	V
Drain Current – Continuous (Tc=25°C)	I_D	8	-7.2	A
Drain Current – Continuous (Tc=100°C)		6	-5.5	A
Drain Current-Pulsed ¹	I_{DM}	35	-32	A
Single Pulse Avalanche Energy ^{2.6}	E_{AS}	12	4	mJ
Single Pulse Avalanched Current ²	I_{AS}	15	11	A
Power Dissipation (Tc=25°C)	P_D	12		W
Power Dissipation – Derate above 25°C		0.13		W/°C
Storage Temperature Range	T_{STG}	-55 to +150		°C
Operating Junction Temperature Range	T_J	-55 to +150		°C
Thermal Resistance Junction-Ambient	$R_{θJA}$	-	52.5	°C/W
Thermal Resistance Junction-Case	$R_{θJC}$	-	5.8	°C/W

N-Channel Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	BV_{DSS}	30	-	-	V
Drain-Source Leakage Current	V _{DS} =30V, V _{GS} =0V, T _J =25°C	I_{DSS}	-	-	1	uA
	V _{DS} =24V, V _{GS} =0V, T _J =125°C		-	-	10	
Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	I_{GSS}	-	-	±100	nA
Static Drain-Source On-Resistance	V _{GS} =10V, I _D =10A	R_{DS(ON)}	-	18	20	mΩ
	V _{GS} =4.5V, I _D =6A		-	21	30	mΩ
Gate -Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	V_{GS(th)}	0.9	1.1	2.2	V
V _{GS(th)} Temperature Coefficient		V_{GS(th)}	-	-4	-	mV/°C
Forward Transconductance	V _{DS} = 5V, I _D = 6A	g_{fs}	-	13	-	S
Total Gate Charge ^{3,4}	V _{DS} =15V V _{GS} =4.5V I _D =8A	Q_g	-	4.1	6	nC
Gate-Source Charge ^{3,4}		Q_{gs}	-	1	1.4	
Gate-Drain Charge ^{3,4}		Q_{gd}	-	2.1	4	
Turn-on delay time ^{3,4}	V _{DD} =15V V _{GS} =10V R _G = 6 I _D = 1A	t_{d(on)}	-	2.8	5	ns
Rise Time ^{3,4}		T_r	-	7.2	14	
Turn-Off Delay Time ^{3,4}		t_{d(OFF)}	-	15.8	30	
Fall Time ^{3,4}		t_f	-	4.6	9	
Input Capacitance	V _{DS} =25V V _{GS} =0V f=1MHz	C_{iss}	-	345	500	pF
Output Capacitance		C_{oss}	-	55	80	
Reverse Transfer Capacitance		C_{rss}	-	32	55	
Gate resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	R_g	-	3.2	6.4	Ω
Continuous Source Current	V _G =V _D =0V, Force Current	I_S	-	-	12	A
Pulsed Source Current		I_{SM}	-	-	24	A
Diode Forward Voltage	V _{GS} =0V, I _S =1A, T _J =25°C	V_{SD}	-	-	1	V

Note :

- 1、Repetitive Rating : Pulsed width limited by maximum junction temperature.
- 2、V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=17A., R_G=25, Starting T_J=25°C.
- 3、The data tested by pulsed, pulse width ≅ 300us, duty cycle ≅ 2%.
- 4、Essentially independent of operating temperature.

P-Channel Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	V(BR)DSS	-30	-	-	V
BVDSS Temperature Coefficient	Reference to 25 °C, I _D =-1mA	ΔBV_{DSS}/ΔT_J	-	-0.03	-	V/°C
Drain-Source Leakage Current	V _{DS} =-30V, V _{GS} =0V, T _J =25 °C	I_{DSS}	-	-	-1	uA
	V _{DS} =-24V, V _{GS} =0V, T _J =125 °C		-	-	-10	
Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	I_{GSS}	-	-	±100	nA
Static Drain-Source On-Resistance	V _{GS} =-10V, I _D =-5A	R_{DS(ON)}	-	43	48	mΩ
	V _{GS} =-4.5V, I _D =-3A		-	66	75	mΩ
Gate -Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	V_{GS(th)}	-1.2	-1.5	-2.5	V
V _{GS(th)} Temperature Coefficient		ΔV_{GS(th)}	-	4	-	mV/°C
Forward Transconductance	V _{DS} = -10V, I _D = -3A	g_{fs}	-	3.5	-	S
Total Gate Charge ^{7,8}	V _{DS} =-15V V _{GS} =-4.5V I _D =-3A	Q_g	-	5.1	7	nC
Gate-Source Charge ^{7,8}		Q_{gs}	-	2	3	
Gate-Drain Charge ^{7,8}		Q_{gd}	-	2.2	4	
Turn-on delay time ^{7,8}	V _{DD} =-15V V _{GS} =-10V R _G = 6 I _D =-1A	t_{d(on)}	-	3.4	6	ns
Rise Time ^{7,8}		T_r	-	10.8	21	
Turn-Off Delay Time ^{7,8}		t_{d(OFF)}	-	26.9	51	
Fall Time ^{7,8}		t_f	-	6.9	13	
Input Capacitance	V _{DS} =-15V V _{GS} =0V f=1MHz	C_{iss}	-	560	810	pF
Output Capacitance		C_{oss}	-	55	80	
Reverse Transfer Capacitance		C_{rss}	-	40	60	
Continuous Source Current	V _G =V _D =0V, Force Current	I_S	-	-	-8	A
Pulsed Source Current		I_{SM}	-	-	-16	A
Diode Forward Voltage	V _{GS} =0V, I _S =-1A, T _J =25 °C	V_{SD}	-	-	-1	V

Note :

5. Repetitive Rating : Pulsed width limited by maximum junction temperature

6. The data tested by pulsed , pulse width V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-10A., R ≅ 300us , duty cycle G=25Ω, Starting T_J=25 ≅ 2%. °C

7. Essentially independent of operating temperature.

Ratings and Characteristic Curves

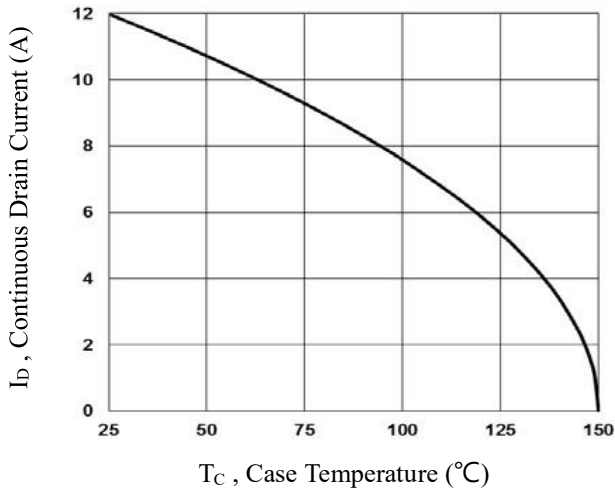


Fig.1 Continuous Drain Current vs. Tc

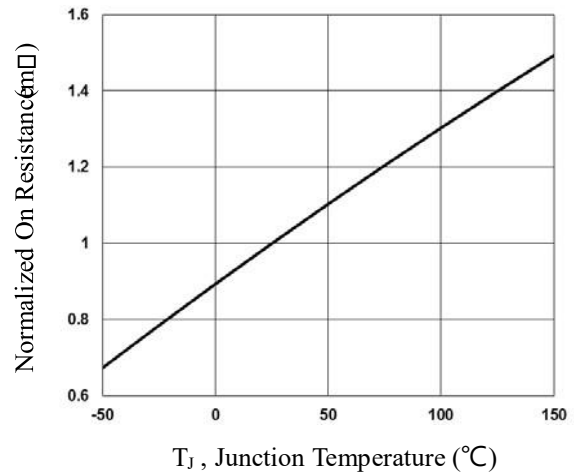


Fig.2 Normalized RDSON vs. Tj

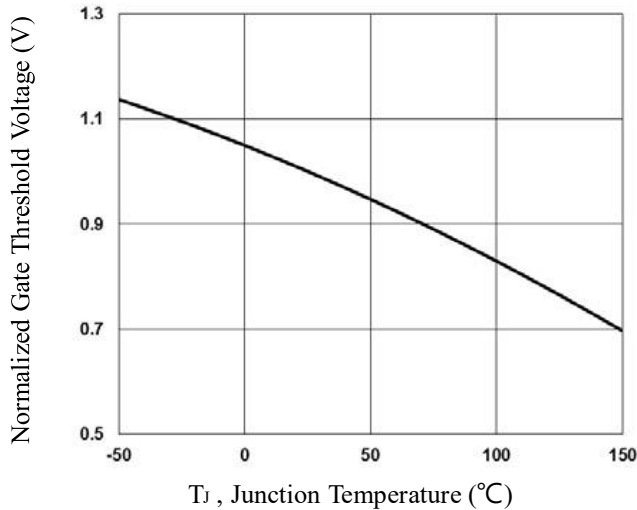


Fig.3 Normalized Vth vs. Tj

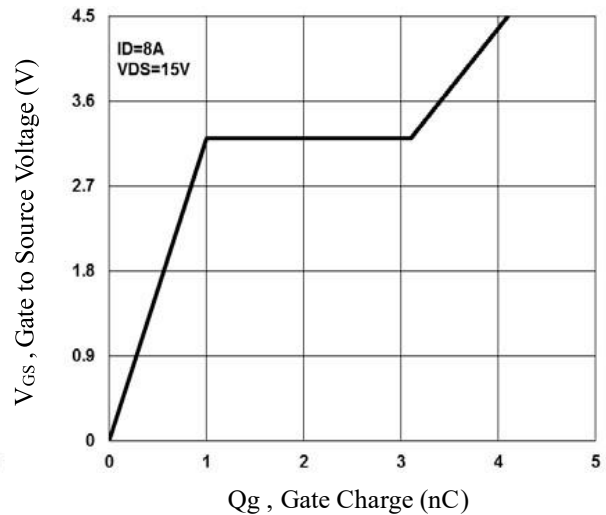
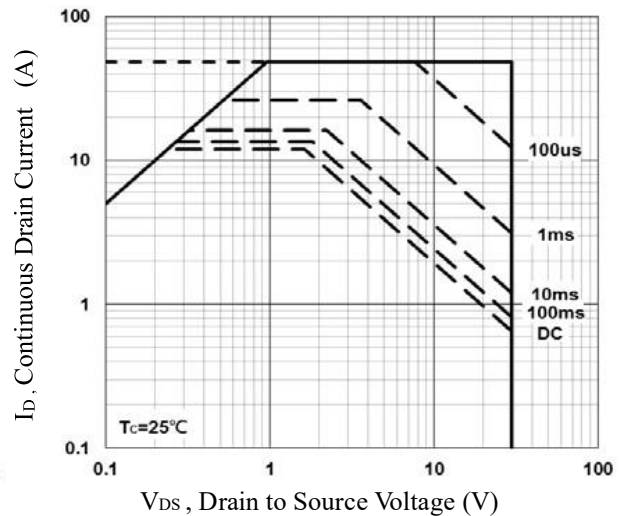
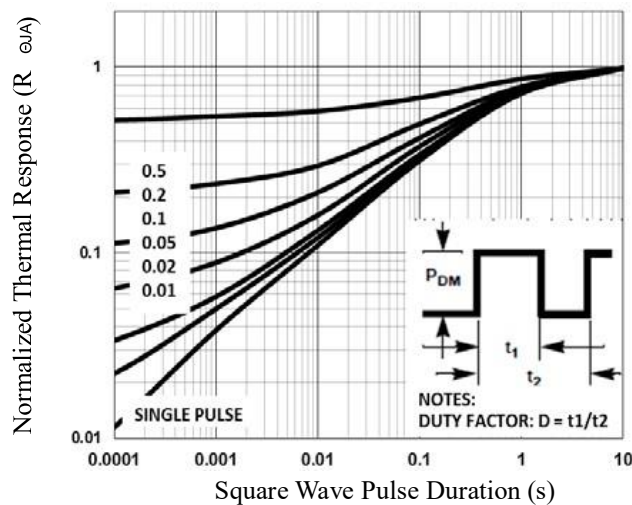


Fig.4 Gate Charge Waveform



Ratings and Characteristic Curves

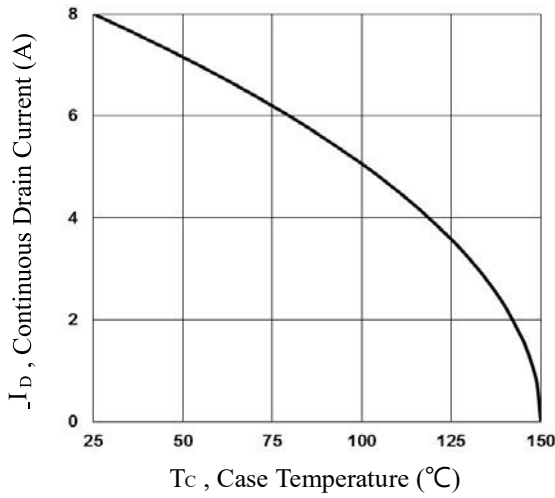


Fig.1 Continuous Drain Current vs. T_c

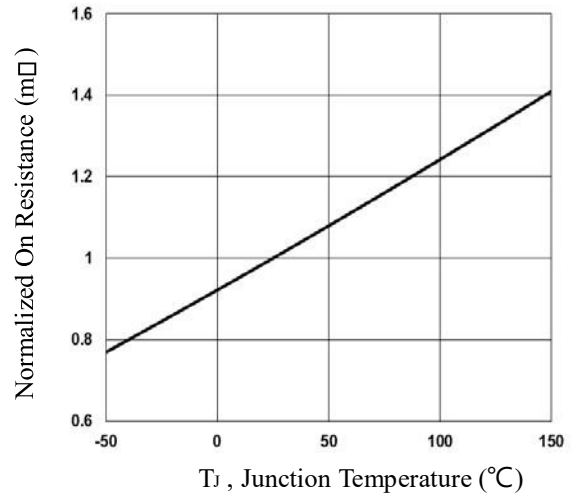


Fig.2 Normalized $R_{DS(on)}$ vs. T_j

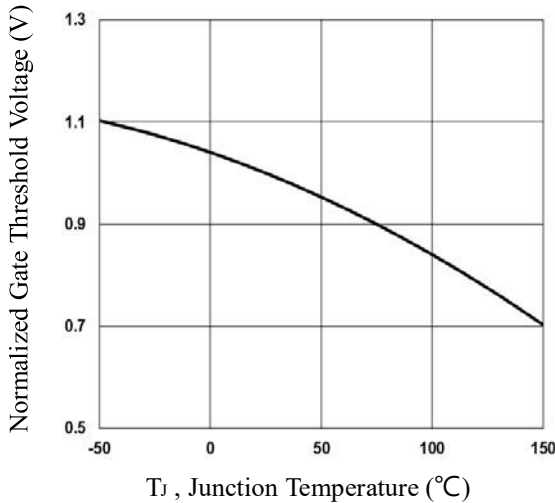


Fig.3 Normalized V_{th} vs. T_j

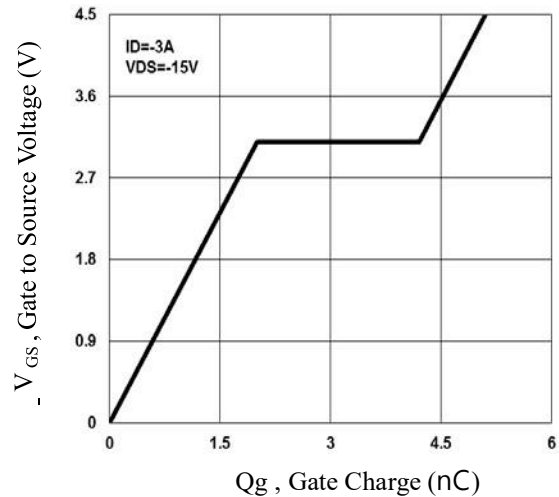


Fig.4 Gate Charge Waveform

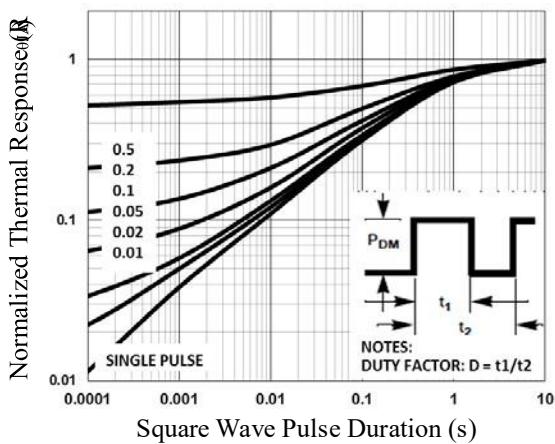


Fig.5 Normalized Transient Impedance

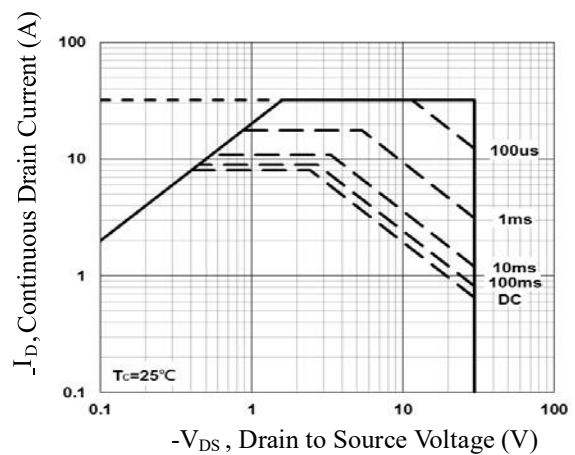
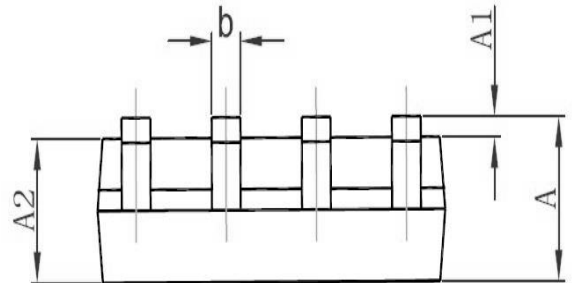
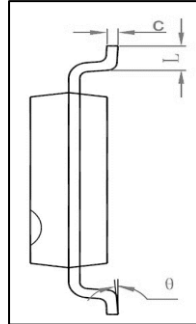
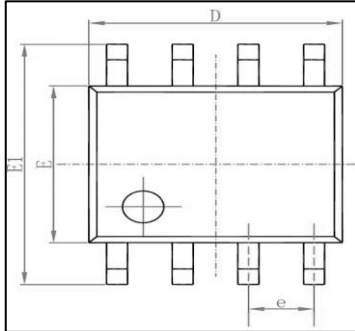
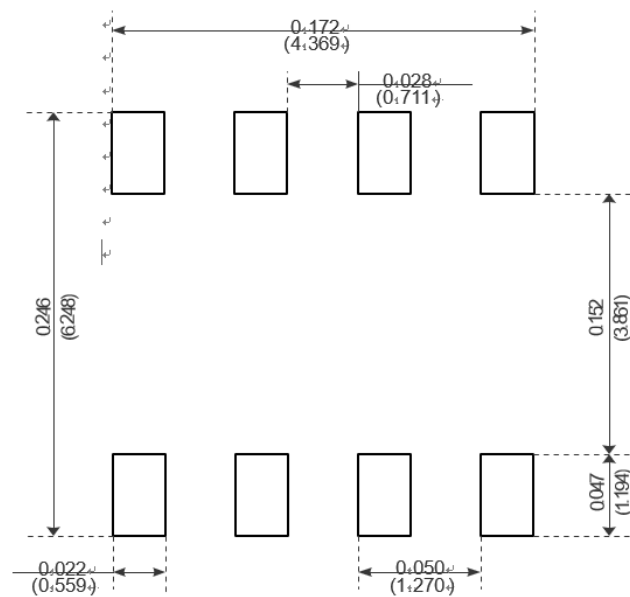


Fig.6 Maximum Safe Operation Area

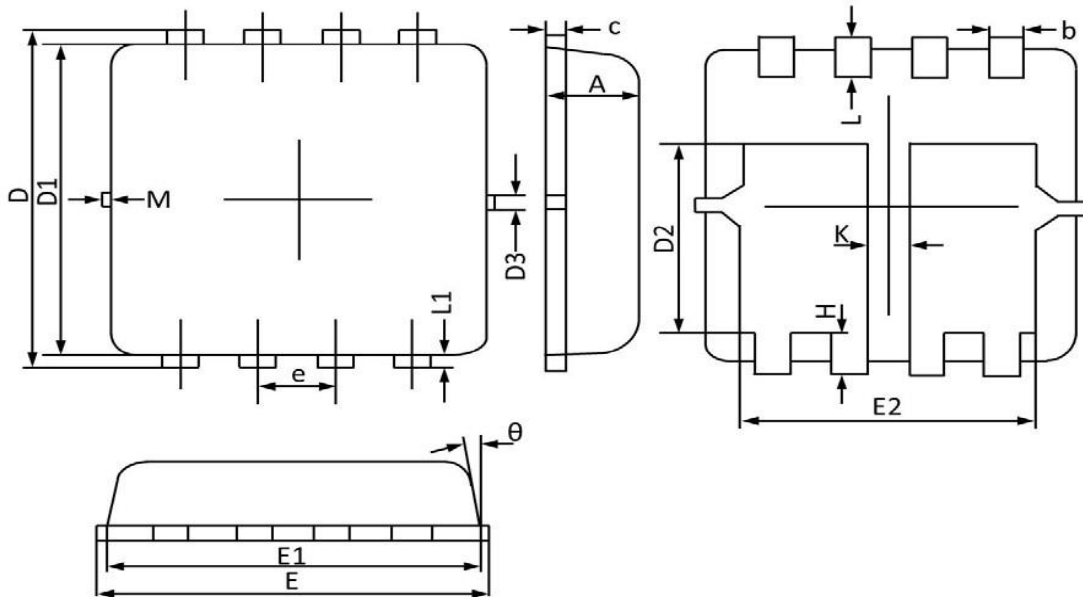


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



Recommended Minimum Pads

DFN3*3-8L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.800	0.028	0.031
b	0.250	0.350	0.010	0.013
c	0.100	0.250	0.004	0.009
D	3.250	3.450	0.128	0.135
D1	3.000	3.200	0.119	0.125
D2	1.780	1.980	0.070	0.077
D3	0.130 REF		0.005 REF	
E	3.200	3.400	0.126	0.133
E1	3.000	3.200	0.119	0.125
E2	2.390	2.590	0.094	0.102
e	0.650 BSC		0.026 BSC	
H	0.300	0.500	0.011	0.019
L	0.300	0.500	0.011	0.019
L1	0.130 REF		0.005 REF	
K	0.300 REF		0.012 REF	
θ	0°	12°	0°	12°
M	0.150 REF		0.006 REF	