STM503N015LSX8H

N-Channel Enhancement Mode Field Effect Transistor

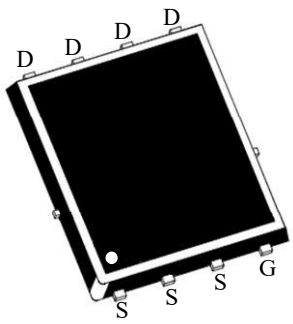
FEATURES

· Low $R_{DS(on)}$

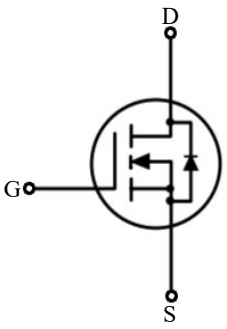
· Suffix "H" indicates Halogen-free parts, ex.STM503N015LSX8H

PIN CONFIGURATION

DFN5×6-8L



Top View



D	Drain
G	Gate
S	Source

Maximum Ratings(T_A=25 ℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current T_C=25℃	I_D	110	A
Continuous Drain Current T_C=100℃		70	
Pulsed Drain Current (Note 1)	I_{DM}	420	A
Avalanche Current	I_{AS}	48.7	A
Avalanche Energy (Note 2)	E_{AS}	119	mJ
Power Dissipation T_C=25℃	P_D	35	W
Thermal Resistance from Junction to Ambient (Note 3)	$R_{\theta JA}$	50	℃/W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	3.6	℃/W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to + 150	℃

Note:

1. The data tested by pulsed, pulse width ≦100μs, duty cycle ≦2%, Reptitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.

2. Limited by $T_{J(MAX)}$, starting T_J=25℃, L=0.1mH, R_g=25Ω, I_{AS}=48.7A, V_{GS}=10V.

3. Device mounted on FR-4 substrate PC board, 2oz copper, with 1 $inch^2$ copper plate in still air.

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Electrical Characteristics(T_A=25 ℃ unless otherwise specified)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	I_D=250μA	$V_{(BR)DSS}$	30	-	-	V
Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	$V_{GS(th)}$	1.2	-	2.5	V
Zero Gate Voltage Drain Current	V_{DS}=24V	I_{DSS}	-	-	1	μA
Gate Leakage Current	V_{GS}=±20V	I_{GSS}	-	-	±100	nA
Drain-Source On-Resistance	V_{GS}=10V, I_D=30A V_{GS}=4.5V, I_D=15A	$R_{DS(on)}$	- -	1.4 -	1.8 2.5	mΩ
Forward Transconductance	V_{DS}=5V, I_D=20A	g_{FS}	-	61	-	S
Dynamic						
Gate Resistance	V_{DS}=0V, V_{GS}=0V, f=1MHz	R_g	-	0.54	-	Ω
Total Gate Charge	V_{DS}=15V, V_{GS}=4.5V, I_D=30A	Q_g	-	80.0	-	nC
	V_{DS}=15V, V_{GS}=10V, I_D=30A		-	163.0	-	
Gate-Source Charge		Q_{gs}	-	23.3	-	
Gate-Drain Charge		Q_{gd}	-	36.7	-	
Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	C_{iss}	-	7462	-	pF
Output Capacitance		C_{oss}	-	886	-	
Reverse Transfer Capacitance		C_{rss}	-	733	-	
Turn on Delay Time	V_{DS}=16.5V, I_D=30A V_{GS}=10V, R_g=3.3Ω	$t_{d(on)}$	-	43	-	ns
Turn on Rise Time		t_r	-	71	-	
Turn off Delay Time		$t_{d(off)}$	-	42	-	
Turn off Fall Time		t_f	-	12	-	
Drain-Source Body Diode						
Diode Forward Voltage	V_{GS}=0V, I_S=1A	V_{SD}	-	-	1.2	V
Diode Continuous Forward Current	-	I_S	-	-	110	A
Diode Pulse Current		I_{SM}	-	-	420	A
Reverse Recovery Time	I_S=20A, di/dt=100A/μs	t_{rr}	-	27	-	ns
Reverse Recovery Charge		Q_{rr}	-	15	-	nC

RATINGS AND CHARACTERISTIC CURVES

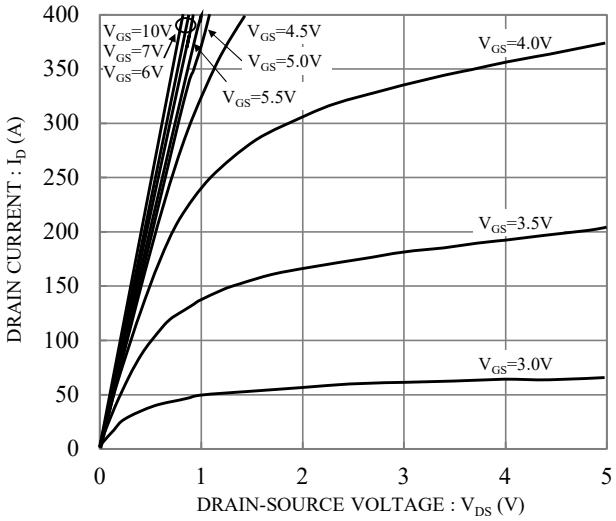


Fig.1 Typical Output Characteristics

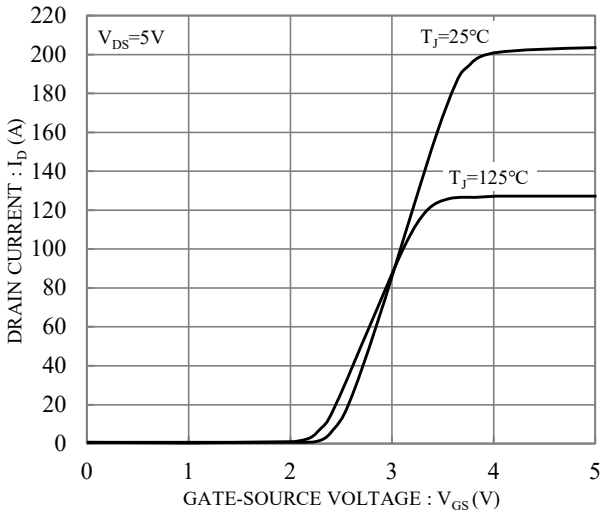


Fig.2 Typical Transfer Characteristics

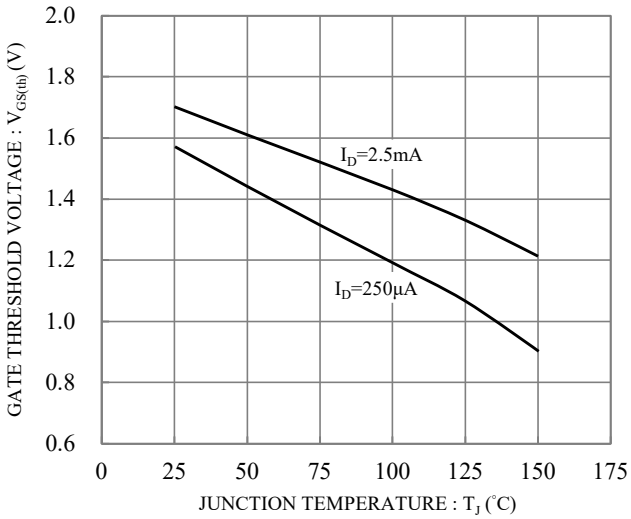


Fig.3 Gate Threshold Voltage vs. Junction Temperature

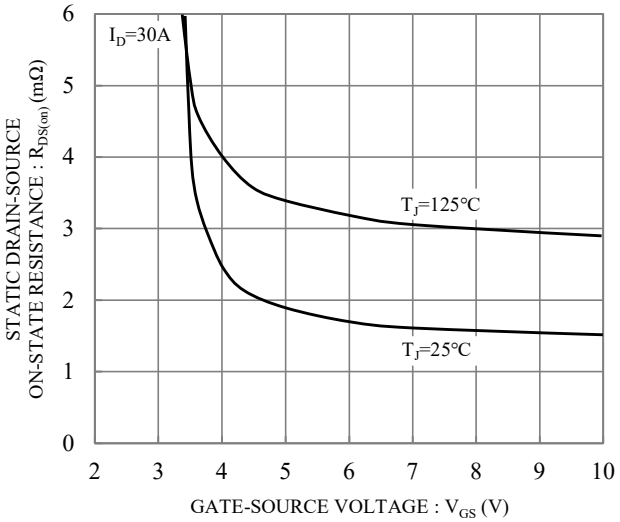


Fig.4 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

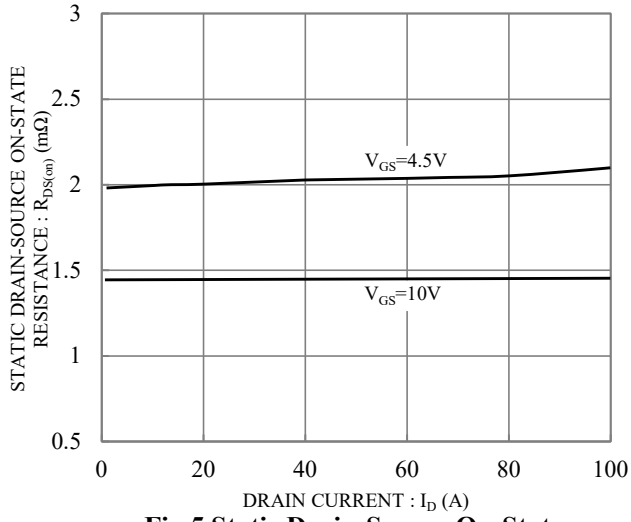


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

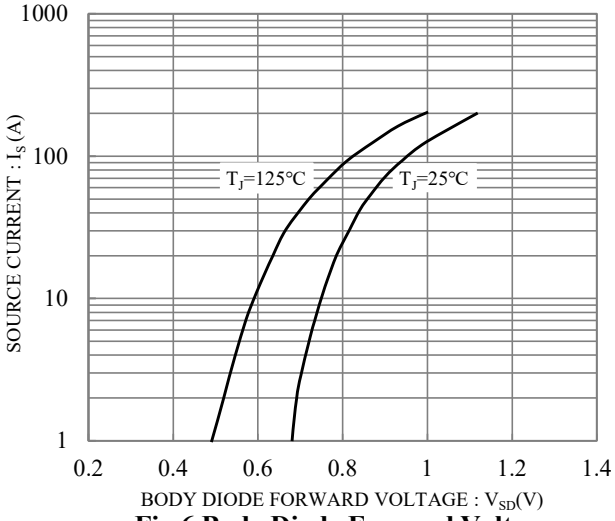


Fig.6 Body Diode Forward Voltage vs. Source Current

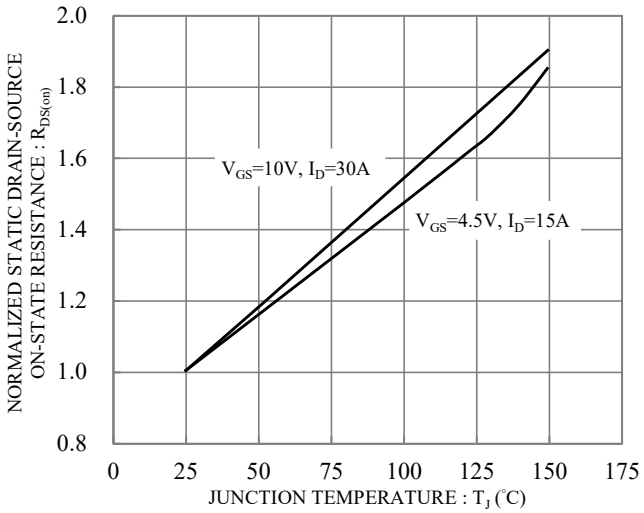


Fig.7 Drain-Source On-State Resistance vs. Junction Tempearture

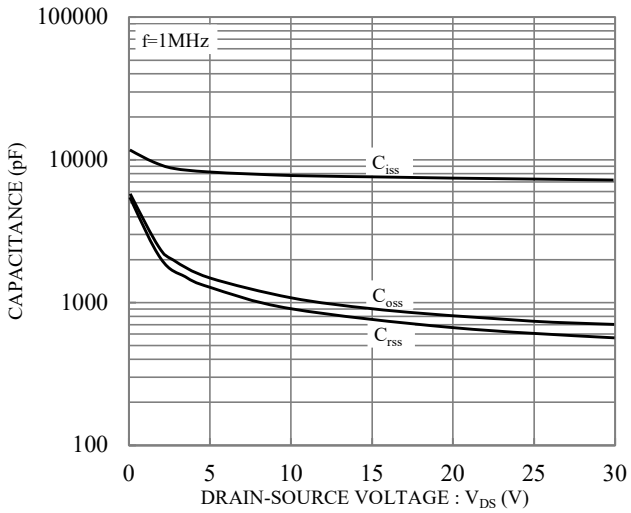


Fig.8 Capacitance vs. Drain-Source Voltage

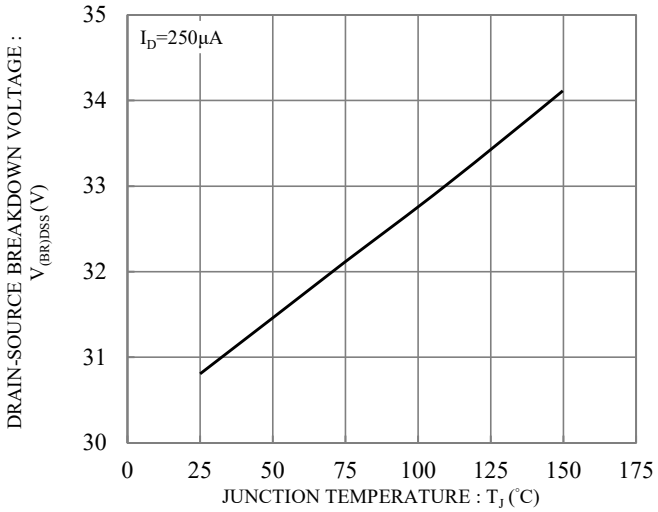


Fig.9 Breakdown Voltage vs. Junction Temperature

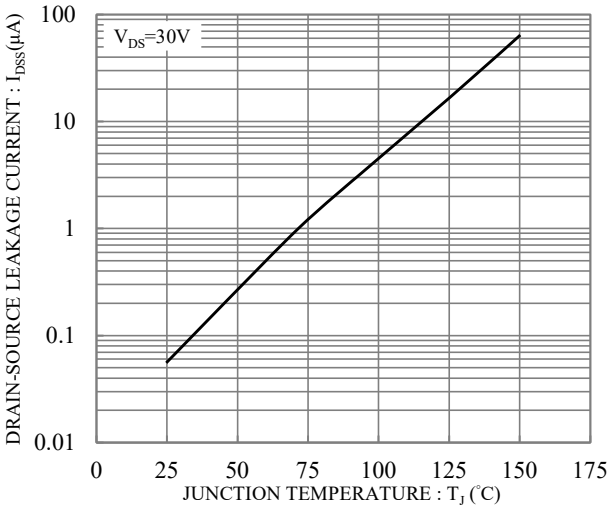


Fig.10 Drain-Source Leakge Current vs. Junction Temperature

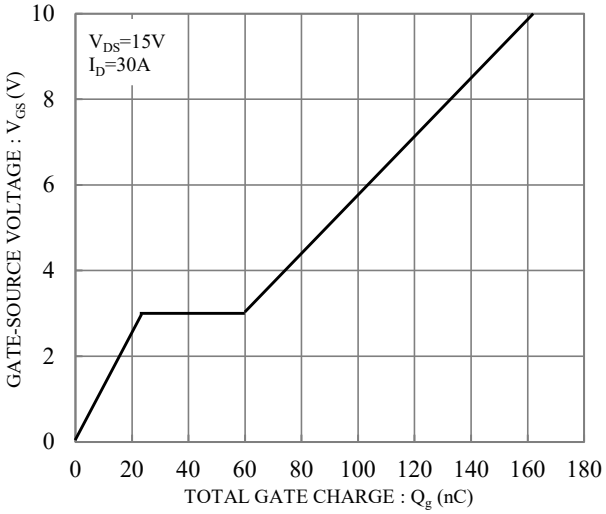


Fig.11 Gate Charge Characteristics

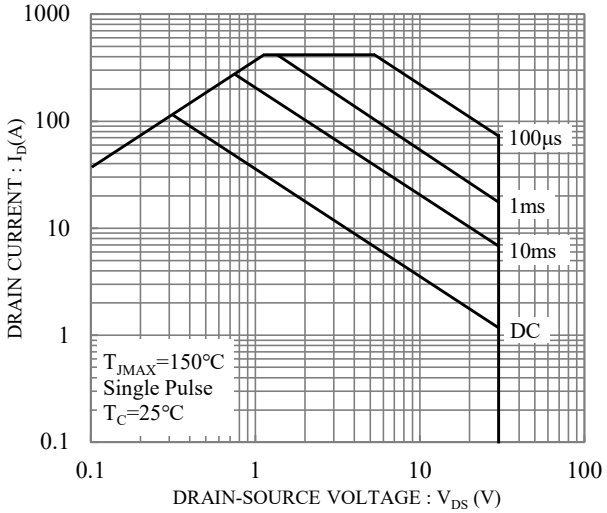


Fig.12 Safe Operation Area

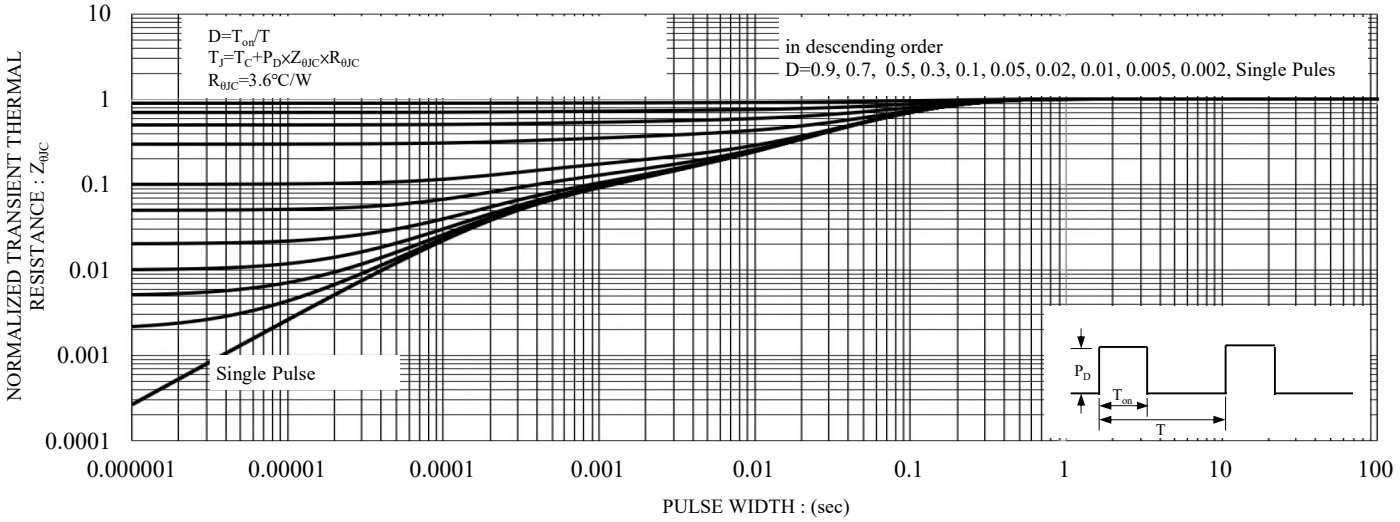


Fig.13 Maximum Transient Thermal Impedance

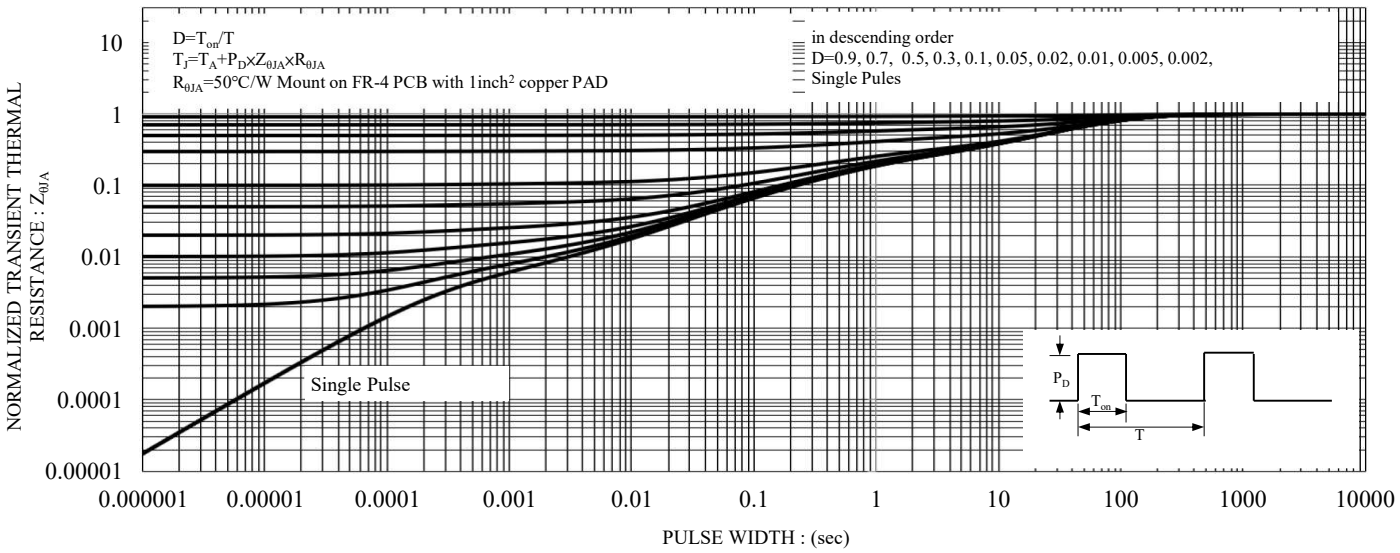
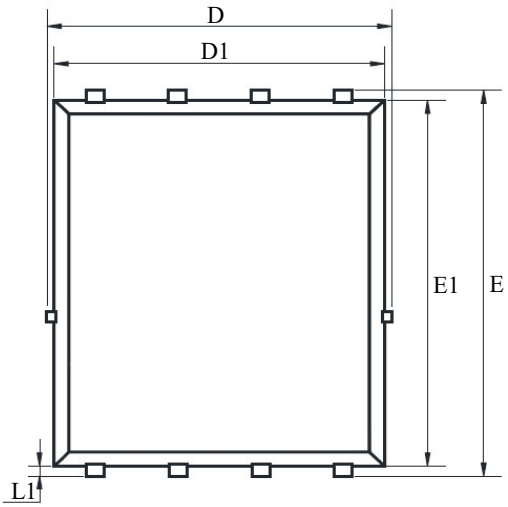


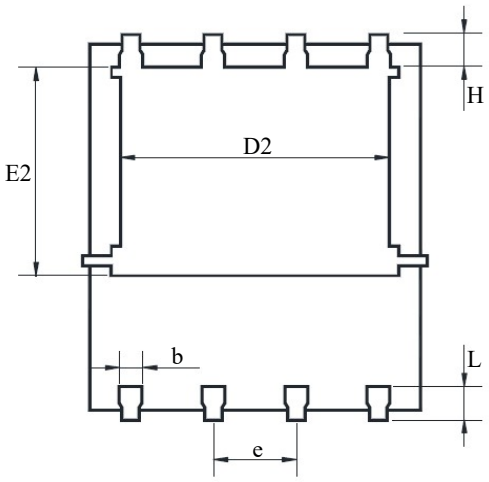
Fig.14 Maximum Transient Thermal Impedance

PACKAGE DIMENSION

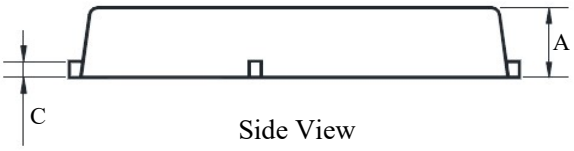
DFN5×6-8L



Top View



Bottom View



Side View

Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.90	1.12	0.035	0.044
b	0.33	0.51	0.013	0.020
C	0.11	0.34	0.004	0.013
D	4.70	5.26	0.185	0.207
D1	4.70	5.10	0.185	0.201
D2	3.56	4.50	0.140	0.177
E	5.75	6.25	0.226	0.246
E1	5.60	6.00	0.220	0.236
E2	3.18	3.66	0.125	0.144
e	1.17	1.37	0.046	0.054
L	0.35	0.71	0.014	0.028
L1	0.06	0.20	0.002	0.008
H	0.35	0.71	0.014	0.028