STM302N060USH8H

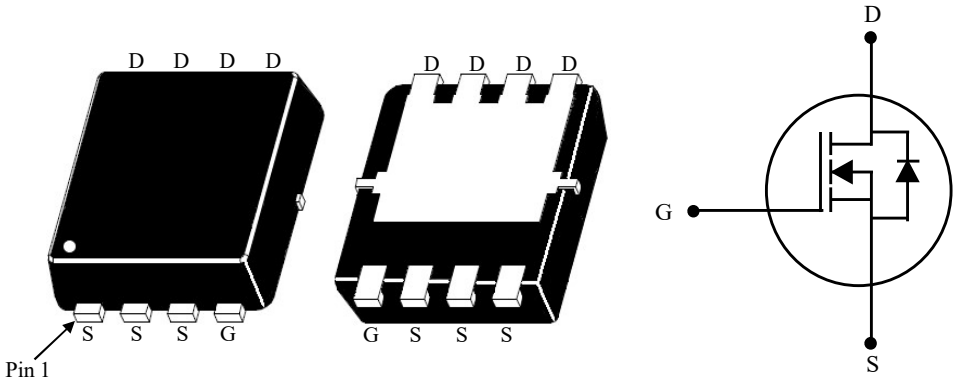
N-Channel Enhancement Mode Field Effect Transistor

FEATURES

· Suffix "H" indicates Halogen-free parts, ex. STM302N060USH8H

PIN CONFIGURATION

DFN3×3-8L



D	Drain
G	Gate
S	Source

Maximum Ratings(T_A=25 ℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	20	V
Gate-Source Voltage		V_{GS}	±12	V
Drain Current	T_C=25℃	I_D	63.0	A
	T_C=100℃		39.7	
Pulsed Drain Current (Note 1)		I_{DM}	250	A
Avalanche Current		I_{AS}	35	A
Avalanche Energy (Note 2)		E_{AS}	61.2	mJ
Power Dissipation	T_C=25℃	P_D	29	W
Thermal Resistance from Juntion to Ambient (Note 3)		$R_{\theta JA}$	60	℃/W
Thermal Resistance from Juntion to Case		$R_{\theta JC}$	4.3	℃/W
Operating and Storage Temperature Range		T_J ,T_{stg}	- 55 to + 150	℃

Note :

1. Pulse Test: Pulse Width≤100μs, Duty Cycle≤2%,Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.
2. Limited by $T_{J(MAX)}$, starting T_J=25°C, L=0.1mH, R_g=25Ω , I_{AS}=35A, V_{GS}=10V.
3. Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square 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	$V_{(BR)DSS}$	20	-	-	V
Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	$V_{GS(th)}$	0.3	-	1.0	V
Zero Gate Voltage Drain Current	V_{DS}=20V	I_{DSS}	-	-	1	μA
Gate-Body Leakage Current	V_{GS}=±12V	I_{GSS}	-	-	±0.1	μA
Drain-Source On-State Resistance	V_{GS}=4.5V, I_D=20A V_{GS}=2.5V, I_D=18A	$R_{DS(on)}$	- -	4.7 -	6.0 6.5	mΩ
Forward Transconductance	V_{DS}=5V, I_D=20A	g_{fs}	-	36	-	S
Dynamic						
Gate Resistance	V_{DS}=0V, V_{GS}=0V, f=1MHz	R_g	-	0.7	-	Ω
Total Gate Charge	V_{DS}=10V, V_{GS}=2.5V, I_D=20A	Q_g	-	26	-	nC
	V_{DS}=10V, V_{GS}=4.5V, I_D=20A		-	44	-	
Gate-Source Charge		Q_{gs}	-	5	-	
Gate-Drain Charge		Q_{gd}	-	15	-	
Input Capacitance	V_{DS}=10V, V_{GS}=0V, f=1MHz	C_{iss}	-	2619	-	pF
Output Capacitance		C_{oss}	-	388	-	
Reverse Transfer Capacitance		C_{rss}	-	344	-	
Turn-On Delay Time	V_{GS}=4.5V, V_{DS}=10V, I_D=20A, R_g=3.3Ω	$t_{d(on)}$	-	25	-	ns
Turn-On Rise Time		t_r	-	82	-	
Turn-Off Delay Time		$t_{d(off)}$	-	30	-	
Turn-Off Fall Time		t_f	-	8	-	
Drain-Source Body Diode						
Drain-Source Diode Forward Voltage	V_{GS}=0V, I_S=1A	V_{SD}	-	-	1.2	V
Diode Continuous Source Current	-	I_S	-	-	63	A
Diode Pulse Current		I_{SM}	-	-	250	A
Reverse Recovery Time	I_S=20A, di/dt=100A/μs	t_{rr}	-	25.9	-	ns
Reverse Recovery Charge		Q_{rr}	-	16.7	-	nC

RATINGS AND CHARACTERISTIC CURVES

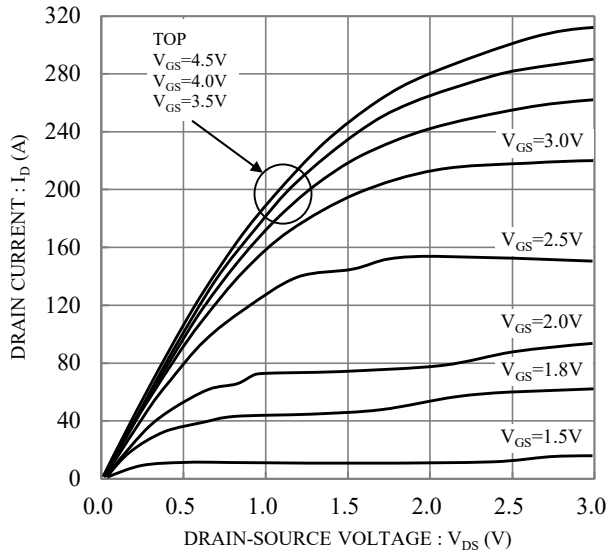


Fig.1 Typical Output Characteristics

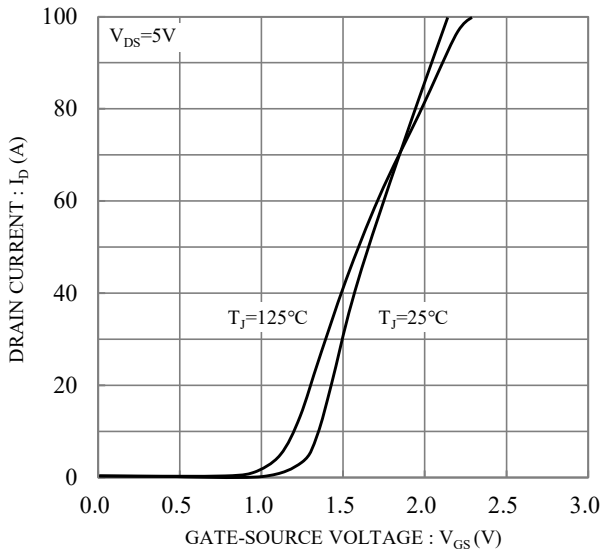


Fig.2 Typical Transfer Characteristics

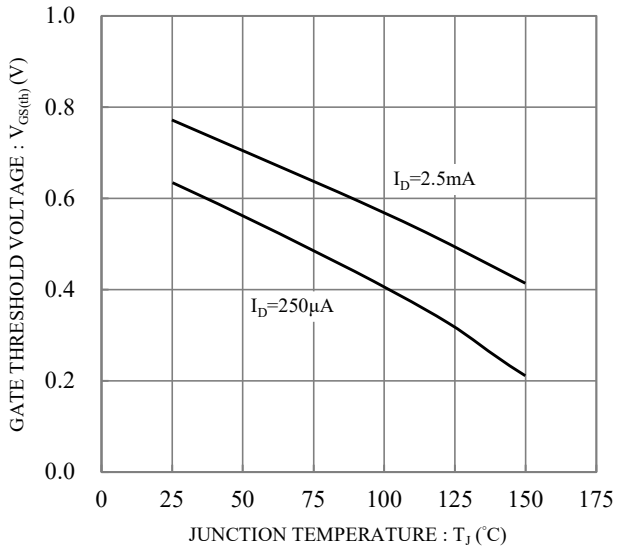


Fig.3 Gate Threshold Voltage vs. Junction Temperature

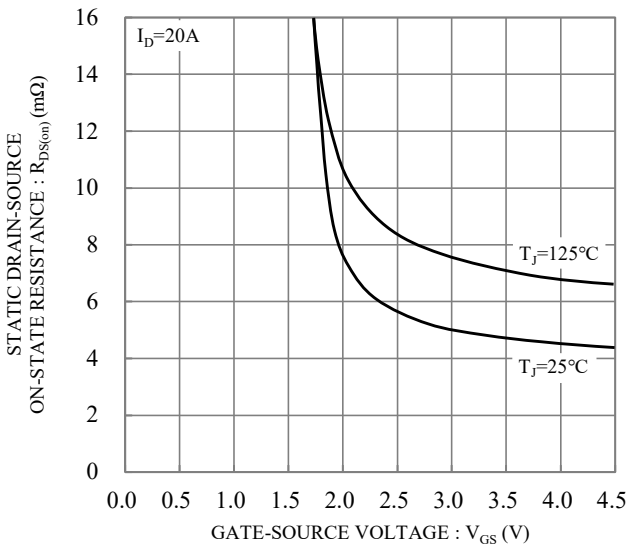


Fig.4 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

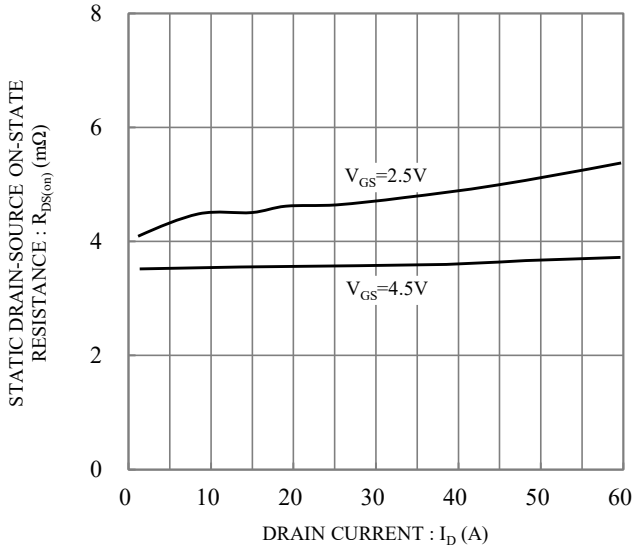


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

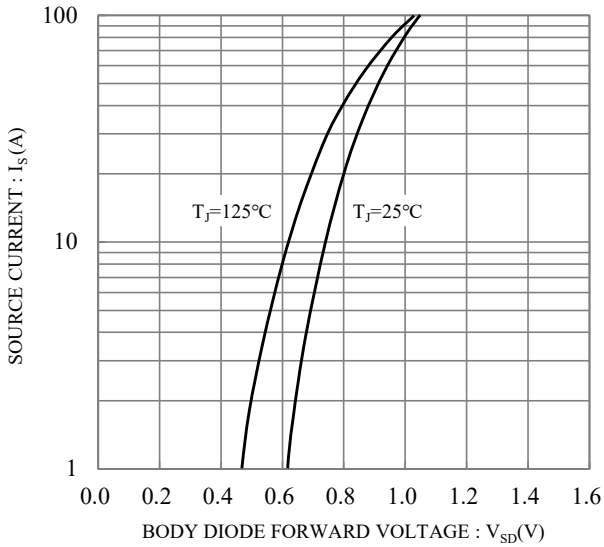


Fig.6 Body Diode Forward Voltage vs. Source Current

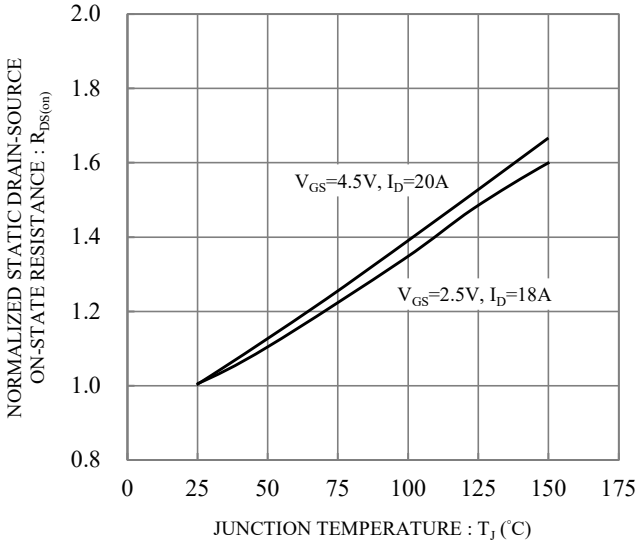


Fig.7 Drain-Source On-State Resistance vs. Junction Tempearture

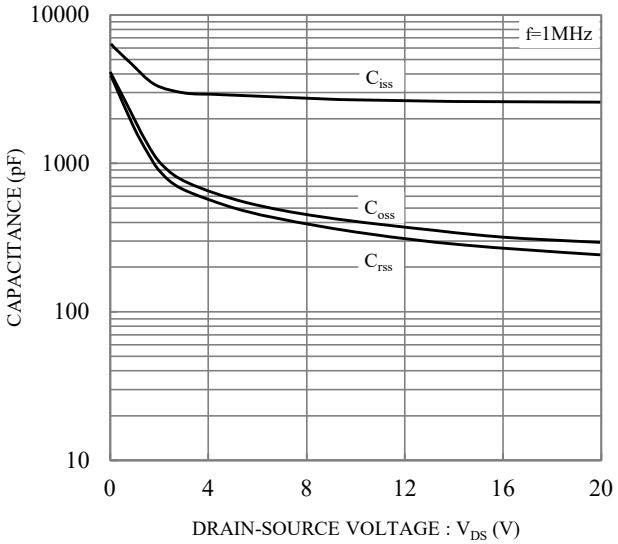


Fig.8 Capacitance vs. Drain-Source Voltage

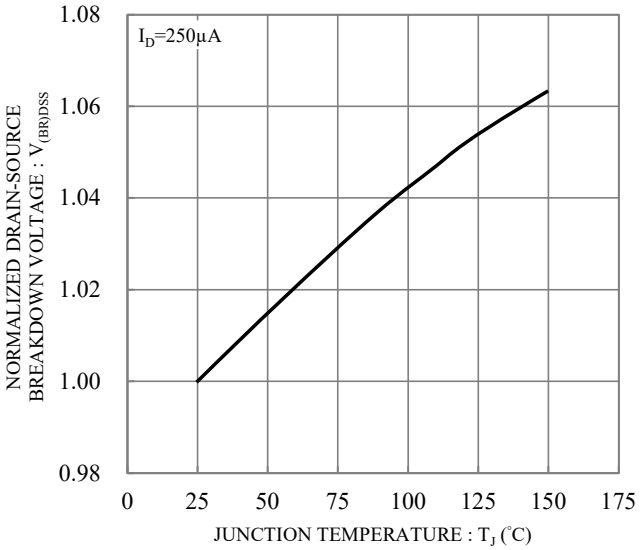


Fig.9 Breakdown Voltage vs. Junction Temperature

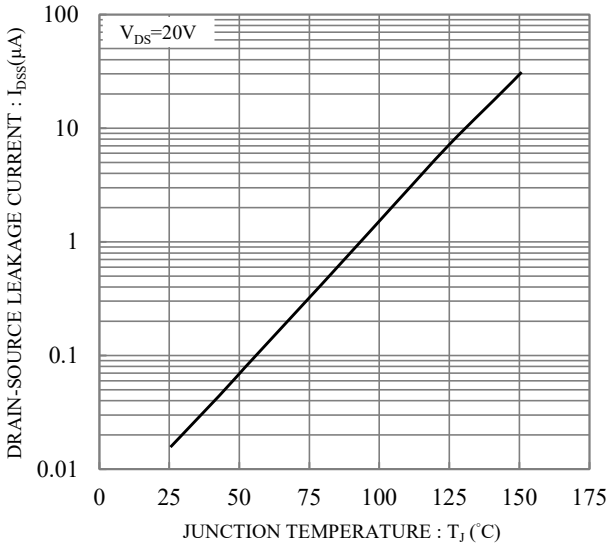


Fig.10 Drain-Source Leakge Current vs. Junction Temperature

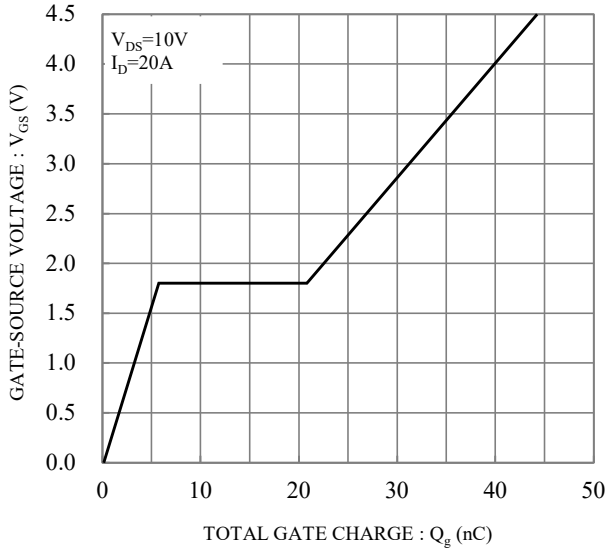


Fig.11 Gate Charge Characteristics

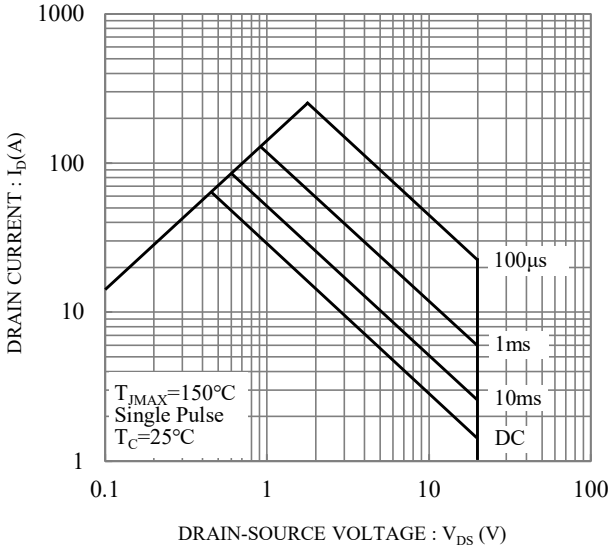


Fig.12 Drain-Source Leakge Current vs. Junction Temperature

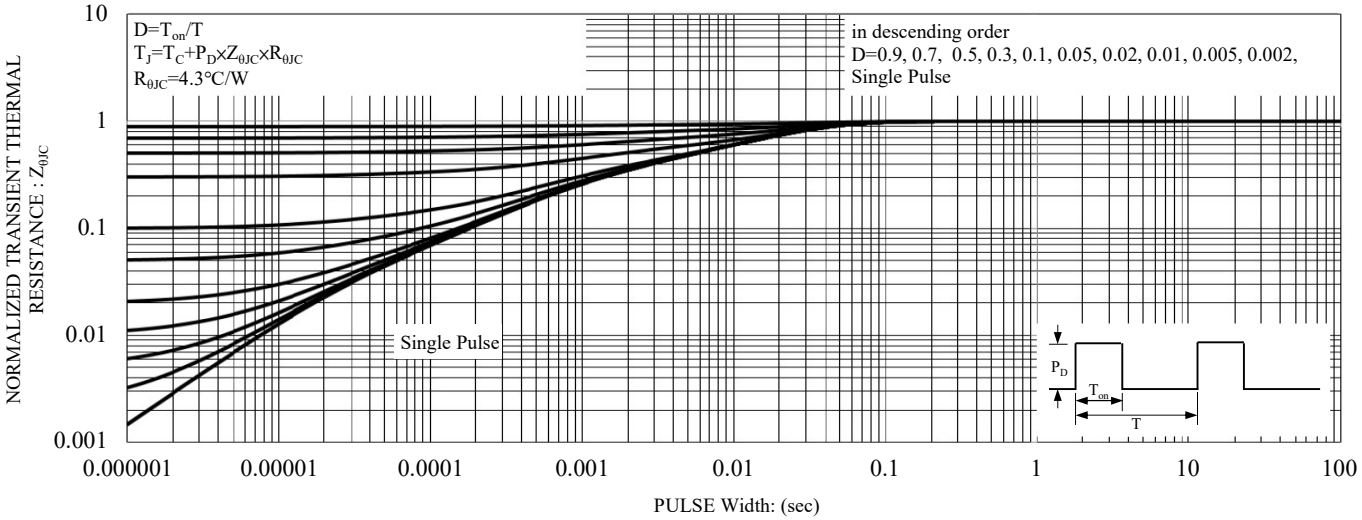


Fig.13 Maximum Transient Thermal Impedance

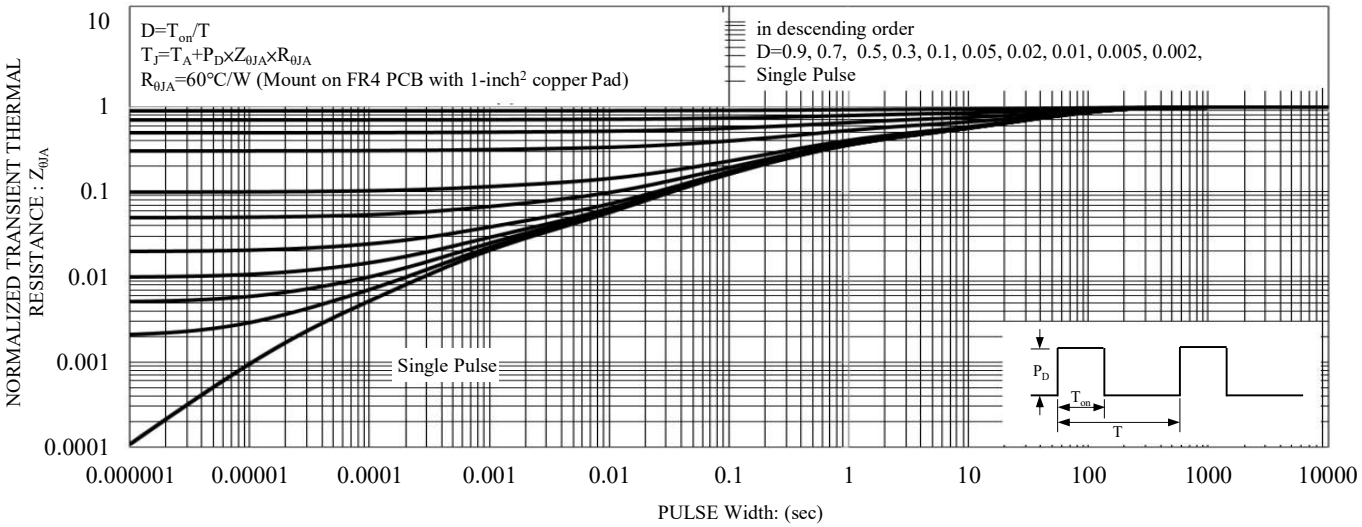
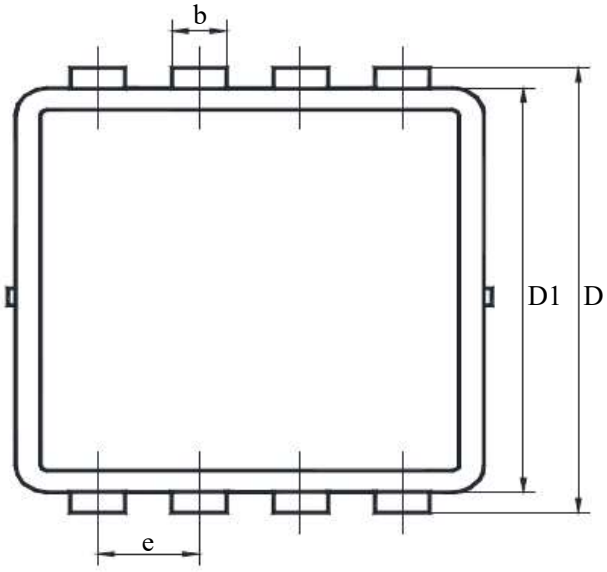


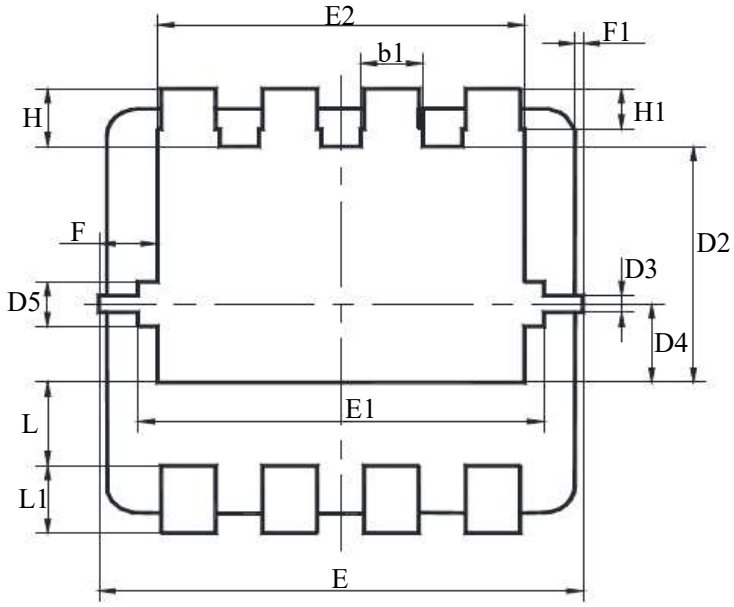
Fig.14 Maximum Transient Thermal Impedance

PACKAGE DIMENSION

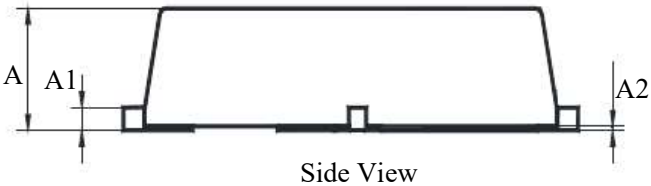
DFN3×3-8L



Top View



Bottom View



Side View

Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.700	0.900	0.028	0.035
A1	0.100	0.250	0.004	0.010
A2	0.000	0.050	0.000	0.002
b	0.240	0.350	0.009	0.014
b1	0.300	0.500	0.012	0.020
D	3.100	3.300	0.122	0.130
D1	2.900	3.100	0.114	0.122
D2	1.650	1.850	0.065	0.073
D3	0.150	0.250	0.006	0.010
D4	0.480	0.680	0.019	0.027
D5	0.230	0.430	0.009	0.017
E	3.000	3.200	0.118	0.126
E1	2.500	2.700	0.098	0.106
E2	2.400	2.600	0.094	0.102
e	0.600	0.700	0.024	0.028
F	0.275	0.475	0.011	0.019
F1	0.000	0.100	0.000	0.004
L	0.520	0.720	0.020	0.028
L1	0.300	0.500	0.012	0.020
H	0.330	0.530	0.013	0.021
H1	0.200	0.400	0.008	0.016

SUGGESTED SOLDER PAD LAYOUT