SMTR06P700LSK3H

P-Channel Enhancement Mode Field Effect Transistor

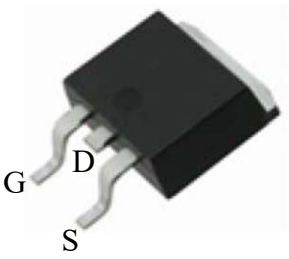
FEATURES

· Fast Switching Speed

· Suffix "H" indicates Halogen-free parts, ex.SMTR06P700LSK3H

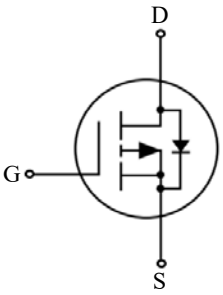
PIN CONFIGURATION

TO-252



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}	60	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current T_C=25℃	I_D	-14.4	A
Continuous Drain Current T_C=100℃		-9.0	
Pulsed Drain Current (Note 1)	I_{DM}	-36	A
Avalanche Current	I_{AS}	-17	A
Single Pulse Avalanche Energy (Note 2)	E_{AS}	14	mJ
Power Dissipation T_C=25℃	P_D	30.3	W
Thermal Resistance from Junction to Ambient (Note 3)	$R_{\theta JA}$	37	℃/W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	4.1	℃/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℃.

2. Limited by $T_{J(MAX)}$, starting T_J=25℃, L=0.1mH, R_g=25Ω, I_{AS}=-17A, 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	$V_{(BR)DSS}$	-60	-	-	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}=-48V	I_{DSS}	-	-	-1	μA
Gate Leakage Current	V_{GS}=±20V	I_{GSS}	-	-	±100	nA
Drain-Source On-Resistance	V_{GS}=-10V, I_D=-10A V_{GS}=-4.5V, I_D=-8A	$R_{DS(on)}$	- -	60 -	70 100	mΩ
Dynamic						
Forward Transconductance	V_{DS}=-5V, I_D=-10A	g_{FS}	-	16.4	-	S
Gate Resistance	V_{DS}=0V, V_{GS}=0, f=1MHz	R_g	-	7.2	-	Ω
Total Gate Charge	V_{DS}=-30V, V_{GS}=-4.5V, I_D=-10A	Q_g	-	7	-	nC
	V_{DS}=-30V, V_{GS}=-10V, I_D=-10A		-	16	-	
Gate-Source Charge		Q_{gs}	-	4	-	
Gate-Drain Charge		Q_{gd}	-	3	-	
Input Capacitance	V_{DS}=-30V, V_{GS}=0V, f=1MHz	C_{iss}	-	954	-	pF
Output Capacitance		C_{oss}	-	50	-	
Reverse Transfer Capacitance		C_{rss}	-	45	-	
Turn on Delay Time	V_{DD}=-30V, I_D=-10A V_{GS}=-10V, R_g=3.3Ω	$t_{d(on)}$	-	8	-	ns
Turn on Rise Time		t_r	-	17	-	
Turn off Delay Time		$t_{d(off)}$	-	12	-	
Turn off Fall Time		t_f	-	3	-	
Drain-Source Body Diode						
Diode Forward Voltage	V_{GS}=0V, I_S=-1A	V_{SD}	-	-	-1.2	V
Diode Continuous Forward Current	-	I_S	-	-	-14.4	A
Diode Pulse Current		I_{SM}	-	-	-36	A
Reverse Recovery Time	I_S=-10A, di/dt=100A/μs	t_{rr}	-	13	-	ns
Reverse Recovery Charge		Q_{rr}	-	9	-	nC

RATINGS AND CHARACTERISTIC CURVES

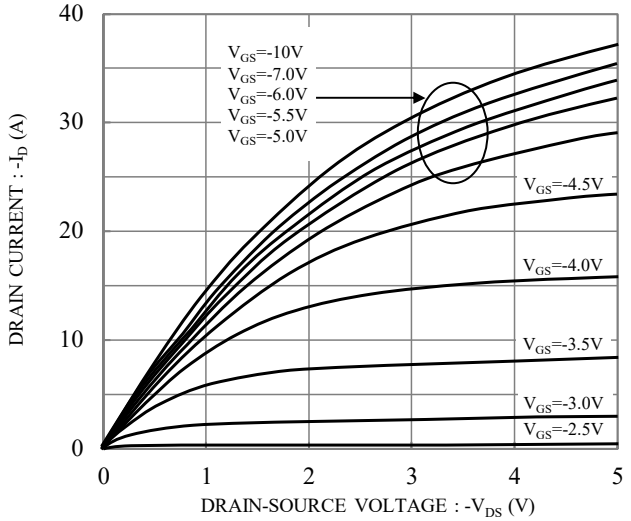


Fig.1 Typical Output Characteristics

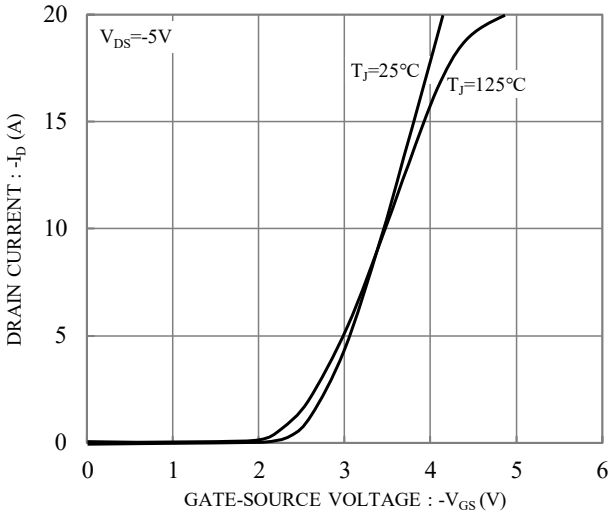


Fig.2 Typical Transfer Characteristics

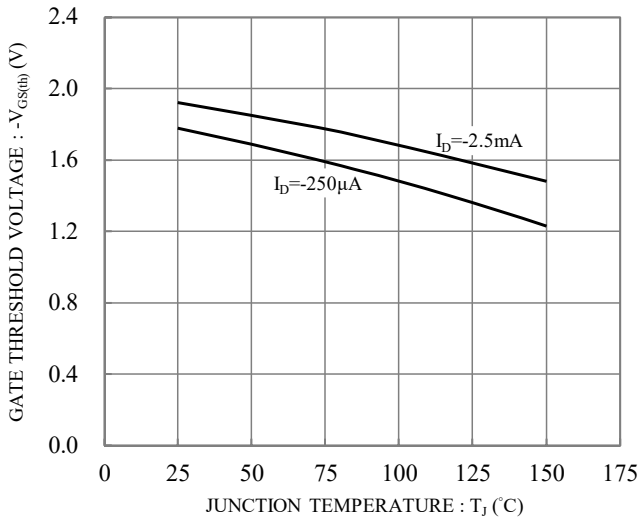


Fig.3 Gate Threshold Voltage vs. Junction Temperature

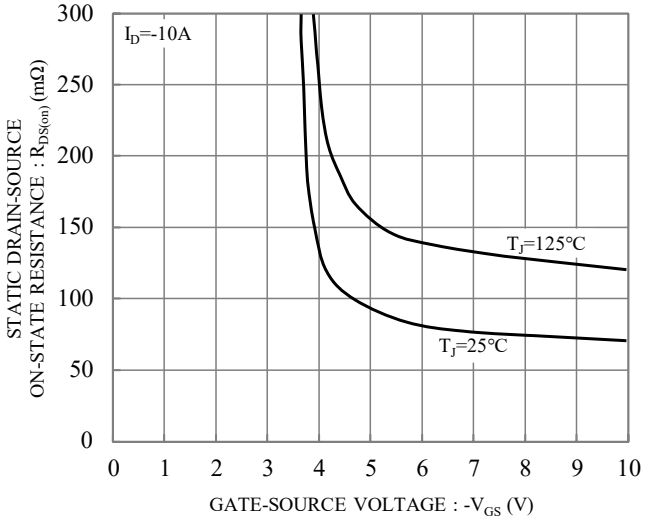


Fig.4 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

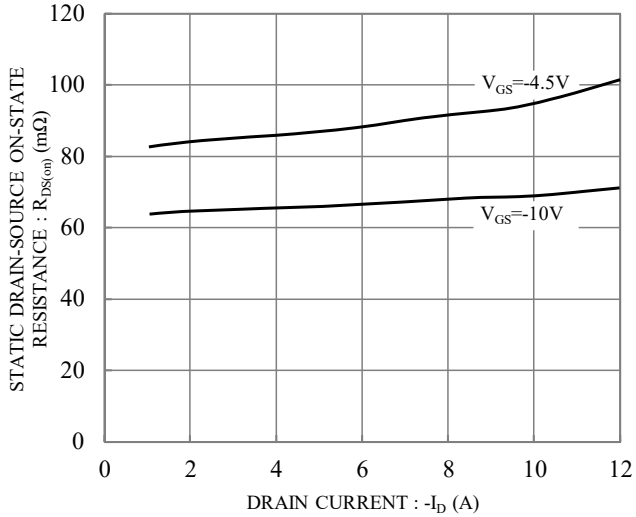


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

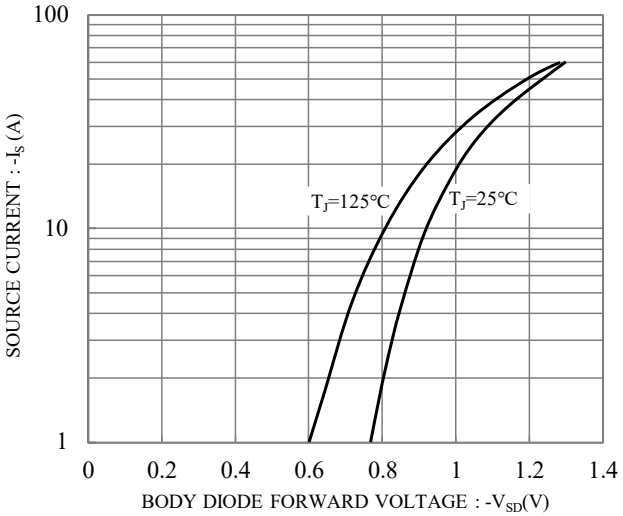


Fig.6 Body Diode Forward Voltage vs. Source Current

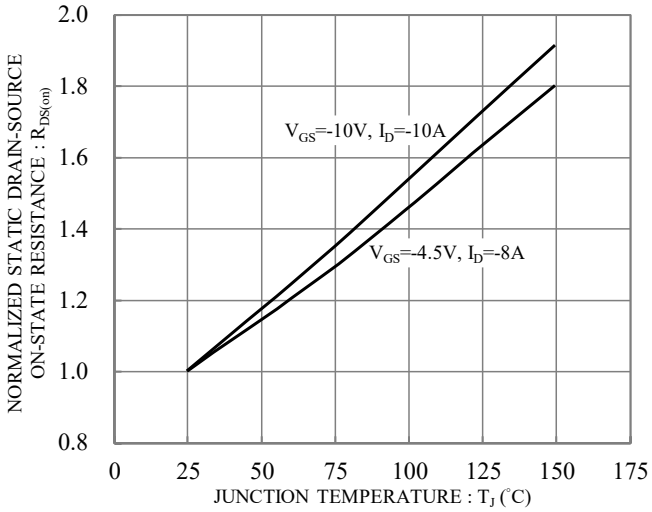


Fig.7 Drain-Source On-State Resistance vs. Junction Tempearture

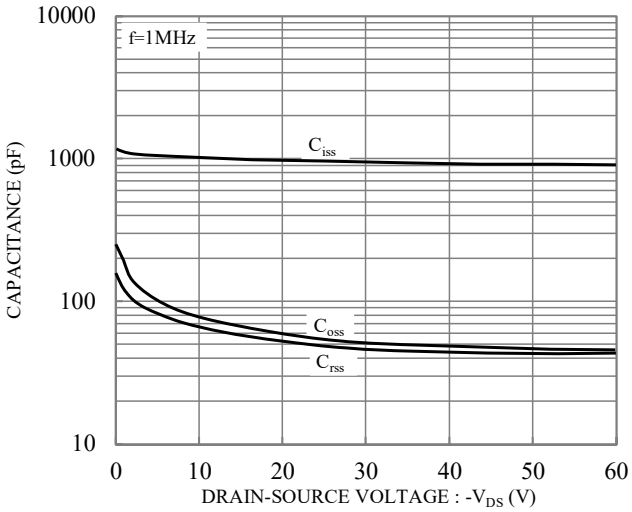


Fig.8 Capacitance vs. Drain-Source Voltage

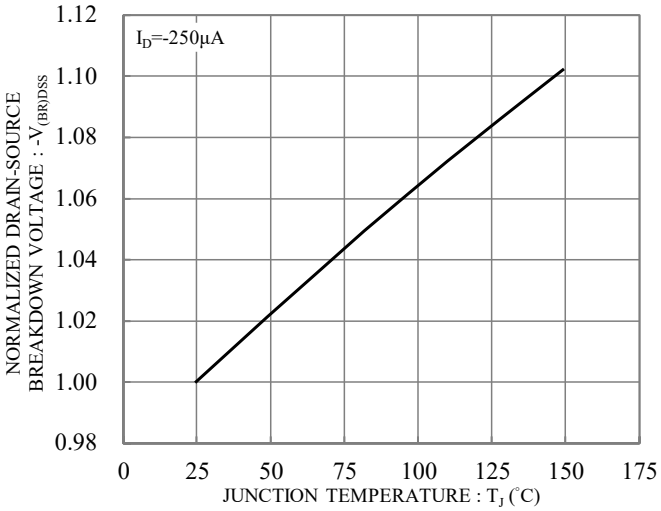


Fig.9 Breakdown Voltage vs. Junction Temperature

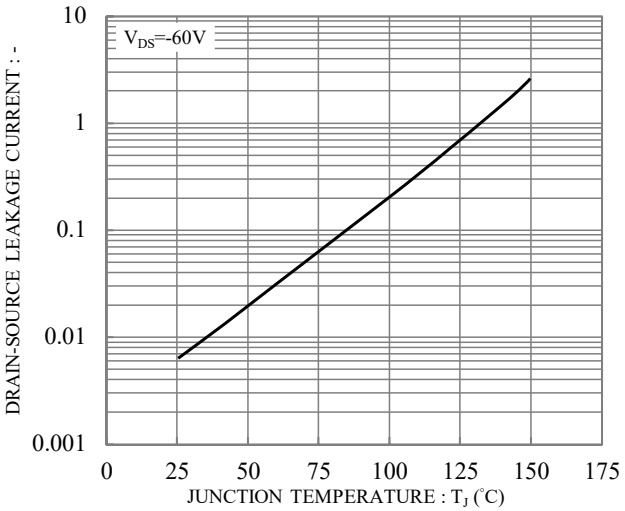


Fig.10 Drain-Source Leakge Current vs. Junction Temperature

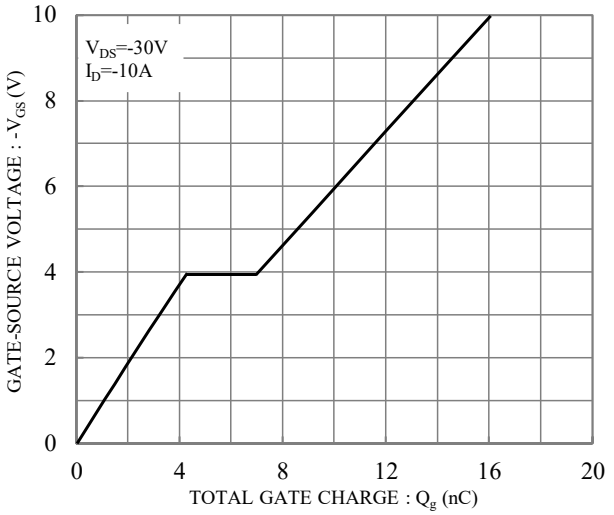


Fig.11 Gate Charge Characteristics

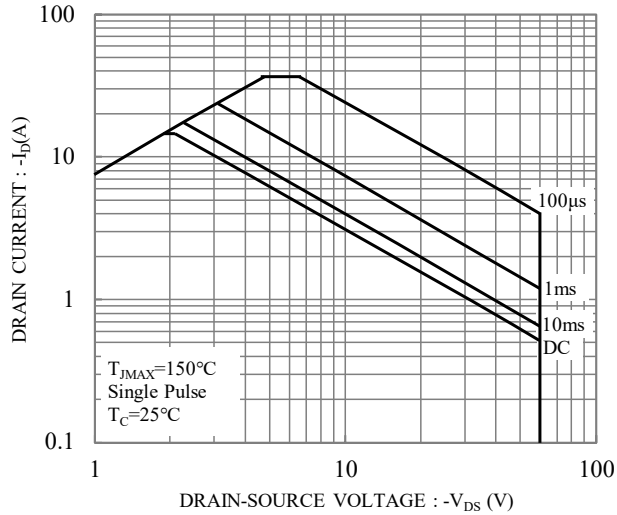


Fig.12 Safe Operation Area

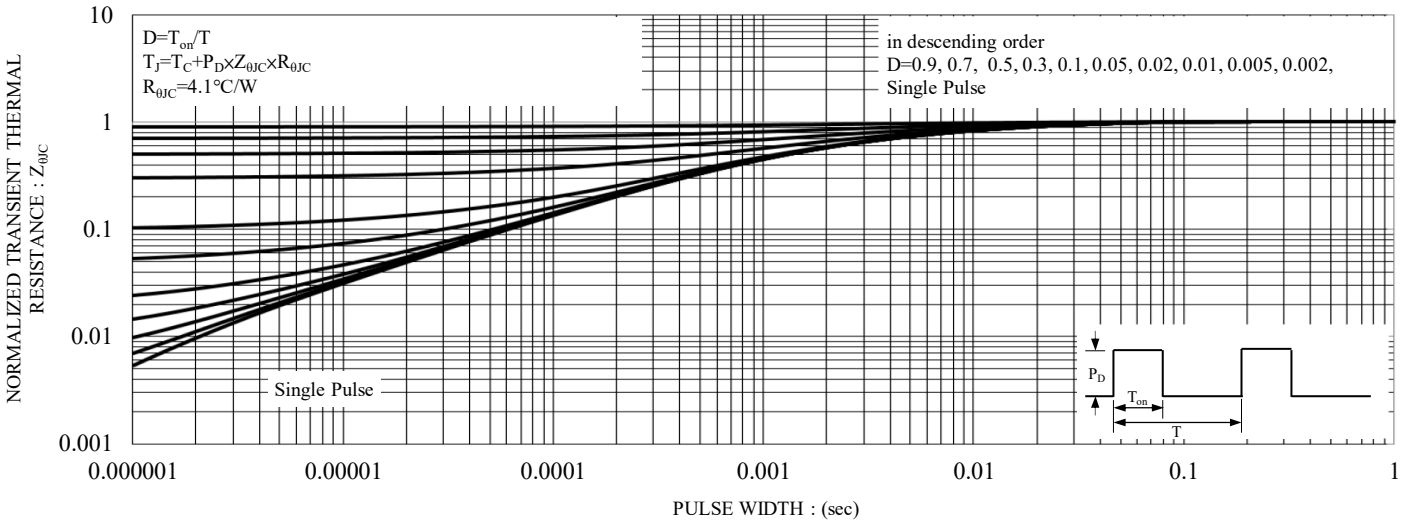


Fig.13 Maximum Transient Thermal Impedance

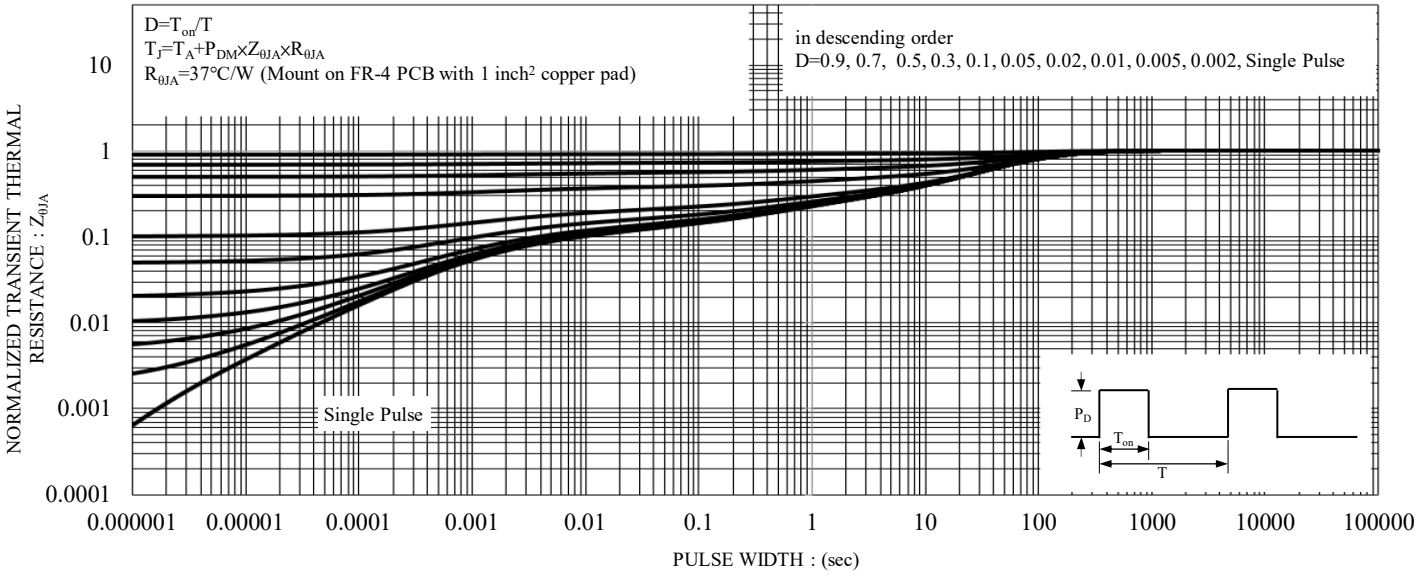
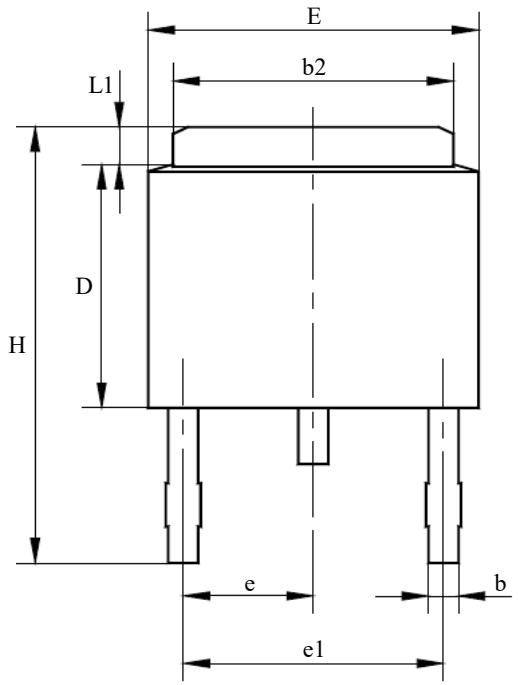


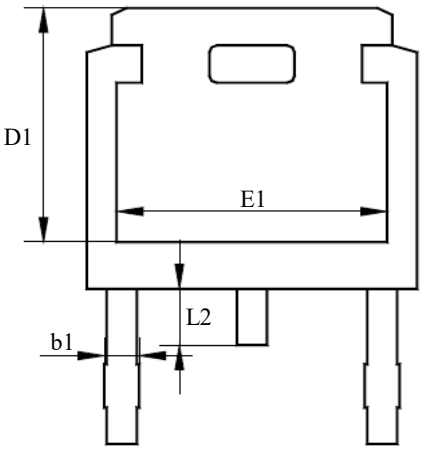
Fig.14 Maximum Transient Thermal Impedance

PACKAGE DIMENSION

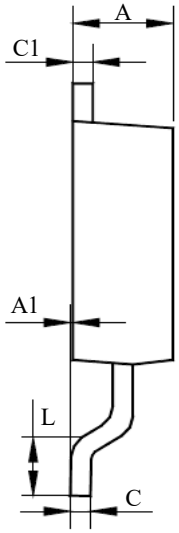
TO-252



Top View



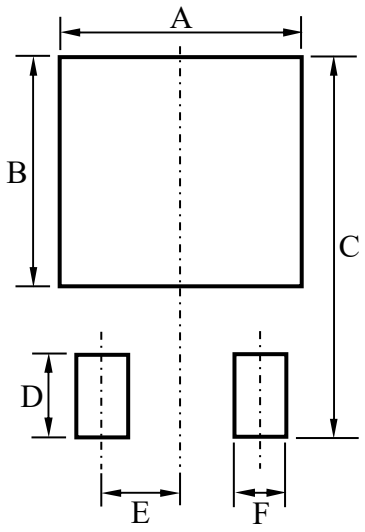
Bottom View



Side View

Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	2.10	2.50	0.083	0.098
A1	0.00	0.15	0.000	0.006
b	0.50	1.00	0.020	0.039
b1	0.65	1.15	0.026	0.045
b2	4.90	5.50	0.193	0.217
C	0.40	0.65	0.016	0.026
C1	0.40	0.65	0.016	0.026
D	5.60	6.20	0.220	0.244
D1	5.00	5.40	0.197	0.213
E	6.10	6.70	0.240	0.264
E1	4.60	5.00	0.181	0.197
e	Typ. 2.30		Typ. 0.091	
e1	Typ. 4.60		Typ. 0.181	
H	9.00	10.70	0.354	0.421
L	1.40	1.78	0.055	0.070
L1	0.85	1.20	0.033	0.047
L2	0.51	1.10	0.020	0.043

SUGGESTED SOLDER PAD LAYOUT



Unit :mm

PACKAGE	A	B	C	D	E	F
TO-252	7.00	7.00	11.60	2.50	2.30	1.50