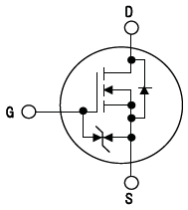
•General Description

The SJ MOSFET LH70R550 has the low $R_{DS(on)}$, low gate charge,fast switching and excellent avalanche characteristics.This device offers extremely fast and robust body diode,and is suitable for telecom and power supplies.



V_{DS}=700V

$R_{DS(ON)}$=0.55Ω

I_D=8A

■ RoHS COMPLIANT

•Features

■Much lower Ron*A performance for On-state efficiency
■Much lower FOM for fast switching effciency

•Application

■Lighting
■Solar/Renewable/UPS-Micro Inverter System
■Power Supplies

•Ordering Information:

Part number	LH70R550	LH70R550
Package	TO-252	TO-220F
Basic ordering unit (pcs)	2500	1000
Normal Package Material Ordering Code	LH70R550T5-T0252-TAP	LH70R550F-T0220F-TU
Halogen Free Ordering Code	LH70R550T5-T0252-TAP-HF	LH70R550F-T0220F-TU-HF

•Absolute Maximum Ratings（TC =25℃）

PARAMETER		SYMBOL	Value	UNIT
Drain-Source Breakdown Voltage		BV_{DSS}	700	V
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current	TC = 25°C	I_D	8	A
	TC = 100°C		4.8	
Pulsed drain current (TC = 25°C, tp limited by Tjmax)[1]		I_D pulse	23	A
Single Pulse Avalanche Energy		I_{AR}	1.45	A
Single Pulse Avalanche Energy[2]		E_{AS}	91	mJ
Repetitive Avalanche Energy[2]		E_{AR}	0.32	mJ
Power Dissipation(TC=25℃)		P_D	28	W
Gate Source ESD(HBM-C=100pF,R=1.5KΩ		$V_{ESD(G-S)}$	2000	V
Operating Temperature and Storage Temperature Range		T_J/T_{STG}	-55~+150	℃
Reverse diode dv/dt[3]		dv/dt	15	V/ns
Maximum diode commutation speed[3]		di_f/dt	50	V/ns

●Electronic Characteristics

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V, I_D=250uA	700	--	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250uA	2.0	--	4.0	V
Drain-source On Resistance[3]	$R_{DS(ON)}$	V_{GS} =10V, I_D=2.4A	--	0.55	0.60	Ω
Drain-Source Leakage Current	I_{DSS}	V_{DS}=650V,V_{GS}=0V,T_J=25℃	--	--	1	uA
		V_{DS}=650V,V_{GS}=0V,T_J=125℃	--	--	100	
Gate-Source Leakage Current	I_{GSS}	VGS=±30V	--	--	±1	uA
Input Capacitance	Ciss	V_{GS} = 0V, V_{DS} = 400V f = 1.0MHz	--	680	--	pF
Output Capacitance	Coss		--	19	--	
Reverse transfer Capacitance	Crss		--	2.9	--	
Turn-on delay time	Td(on)	V_{DD}=325V, I_D =3.3A R_G=25Ω	--	25	--	ns
Turn -Off Delay Time	Td(off)		--	87	--	
Rise time	Tr		--	19	--	
Fall time	Tf		--	18	--	
Total Gate Charge	Qg	I_D =3.2A, V_{DS} = 520V V_{GS} = 10V	--	16	---	nC
Gate-to-Source Charge	Qgs		--	3.1	--	
Gate-to-Drain Charge	Qgd		--	5.2	---	
Continuous Diode Forward Current	I_S	--	--	--	8.0	A
Pulsed Diode Forward Current[1]	I_{SM}	--	--	--	23	A
Diode Forward Voltage	V_{SD}	Tj=25°C, Is=3.3A V_{GS} =0V	--	--	1.3	V
Reverse Recovery Time	trr	V_{RR}=400V, If=Is di_F/dt=100A/μs	--	250	--	ns
Reverse Recovery Charge	Qrr		--	1.9	--	uC

●Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-case	Rth_{JC}	4.47	℃/W
Thermal Resistance Junction-ambient	Rth_{JA}	80	℃/W

Notes:

1.Repetitive Rating: Pulse width limited by maximum junction temperature.

2. I_{AS} = 1.45A, V_{DD} = 25V, R_G = 25Ω, Starting T_J = 25°C

3. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%

●Typical Characteristics T_J=25ºC,unless otherwise noted

Figure 1. On Region Characteristics

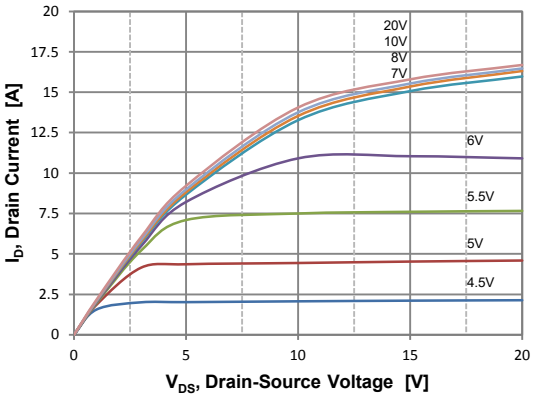


Figure 2. Transfer Characteristics

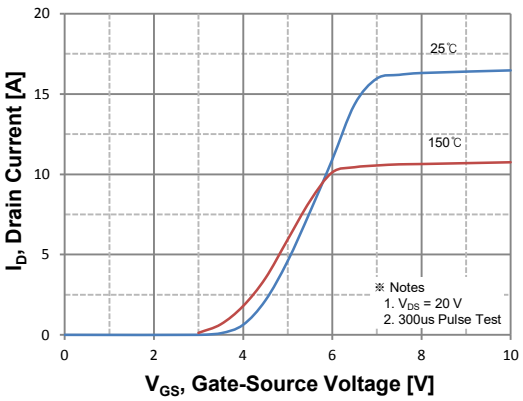


Figure 3. On Resistance Variation vs Drain Current and Gate Voltage

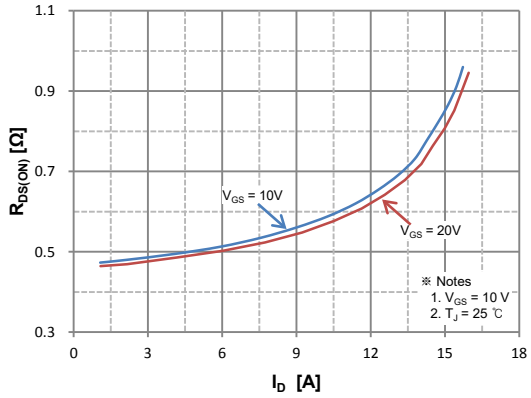


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

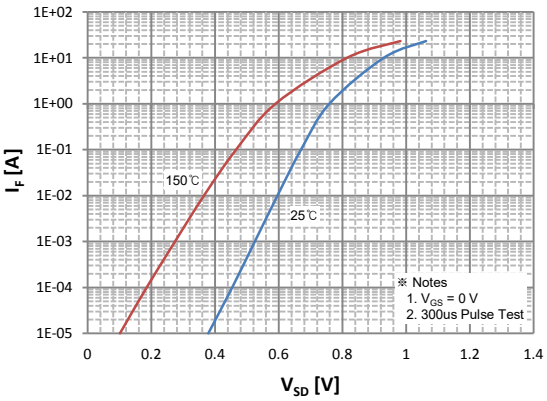


Figure 5. Capacitance Characteristics

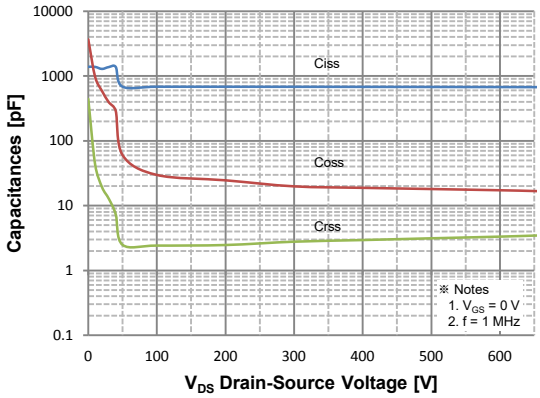
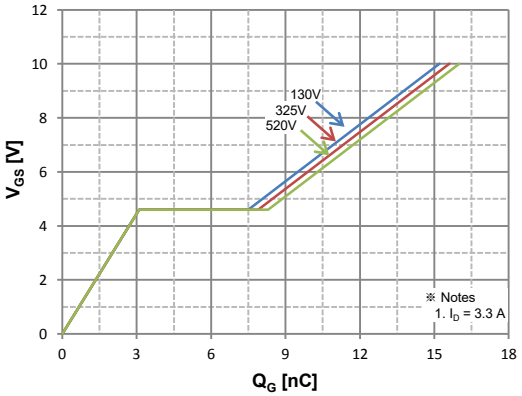


Figure 6. Gate Charge Characteristics



●Typical Characteristics(cont.)

Figure 7. Breakdown Voltage Variation vs. Temperature

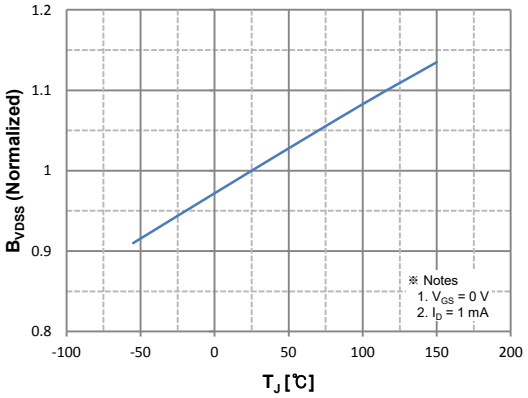


Figure 8. On-Resistance Variation vs. Temperature

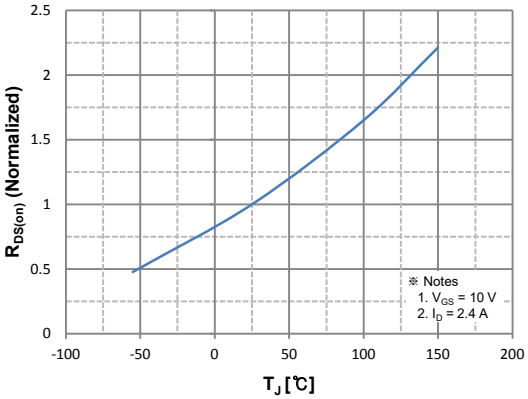


Figure 9. Maximum Safe Operating Area

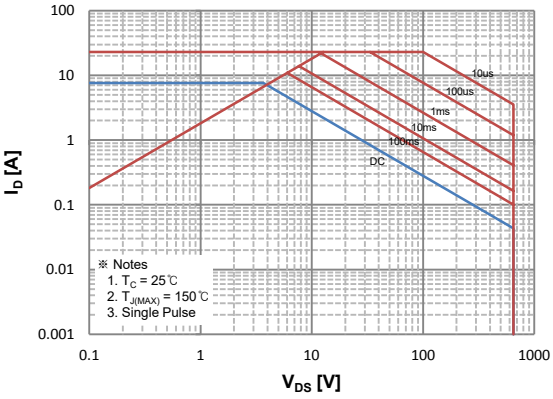


Figure 10. Maximum Drain Current vs. Case Temperature

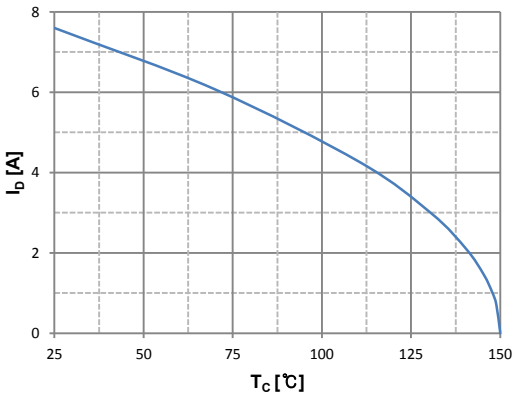
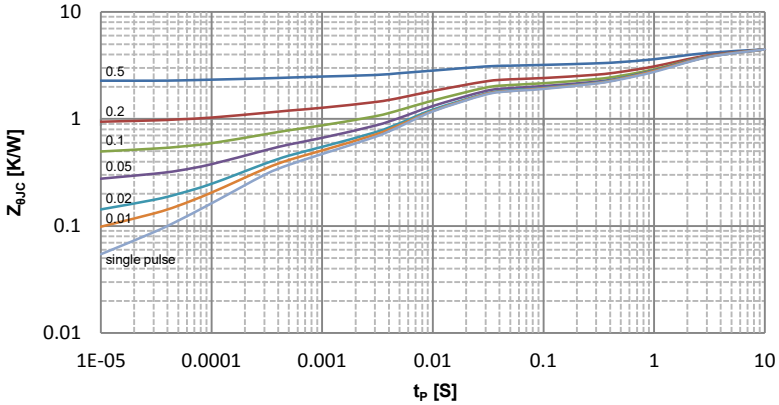


Figure 11. Transient Thermal Response Curve



• Test circuits&Waveforms

Fig 1. Gate Charge Test Circuit & Waveform

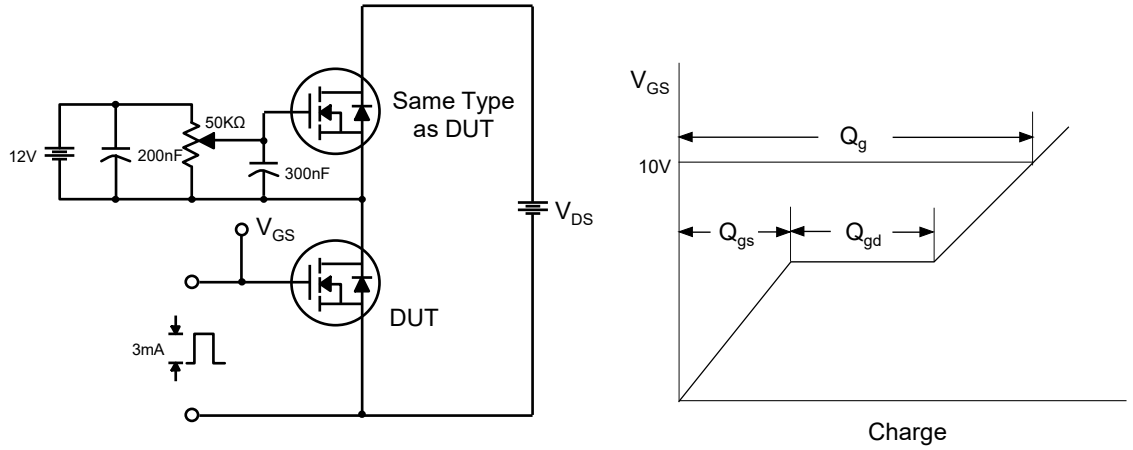


Fig 2. Resistive Switching Test Circuit & Waveforms

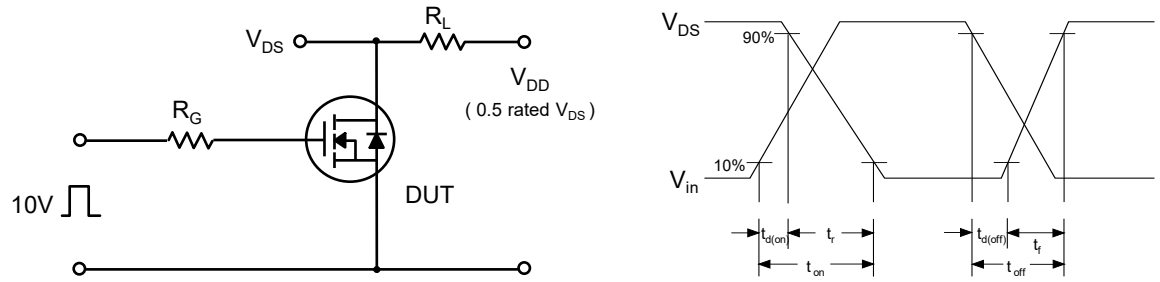
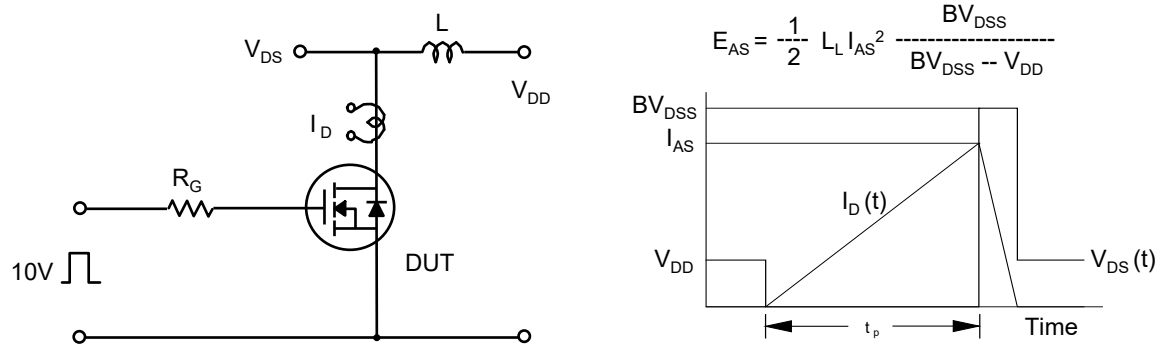
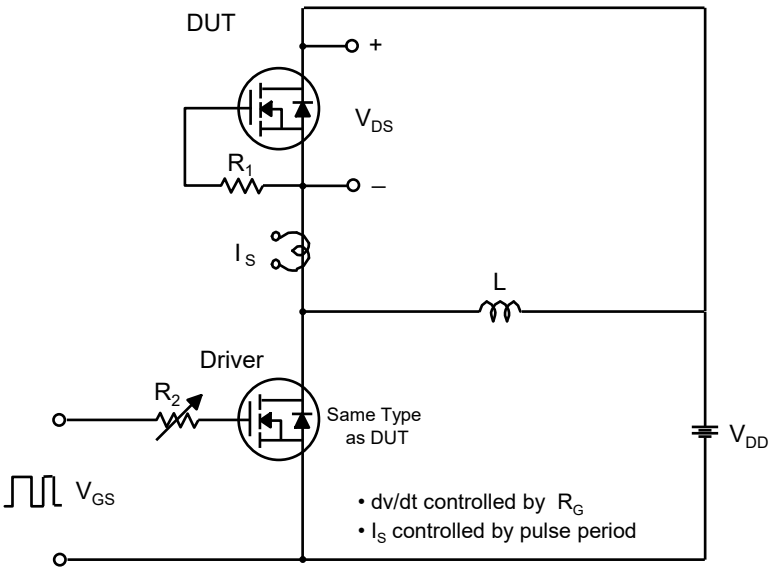


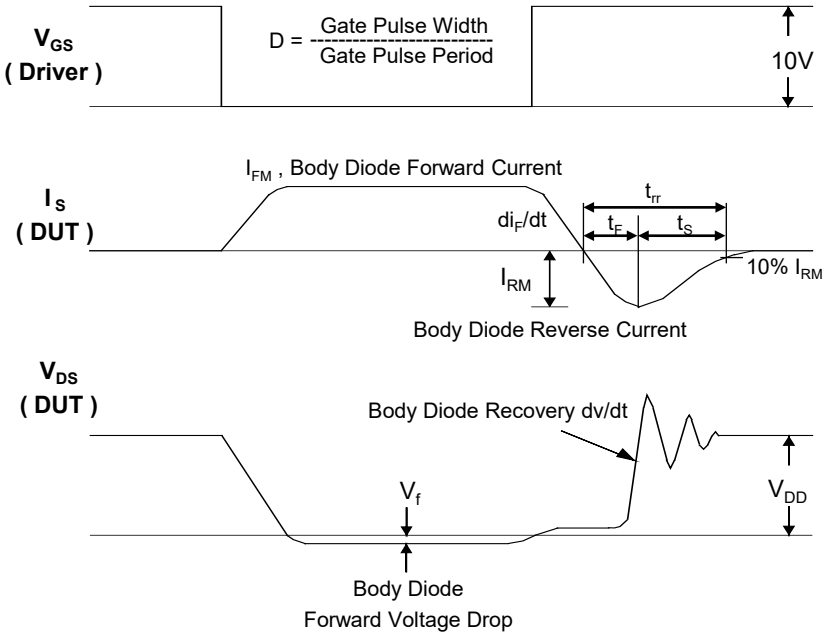
Fig 3. Unclamped Inductive Switching Test Circuit & Waveforms



●Test circuits&Waveforms(cont.)

Fig 4. Peak Diode Recovery dv/dt Test Circuit & Waveforms

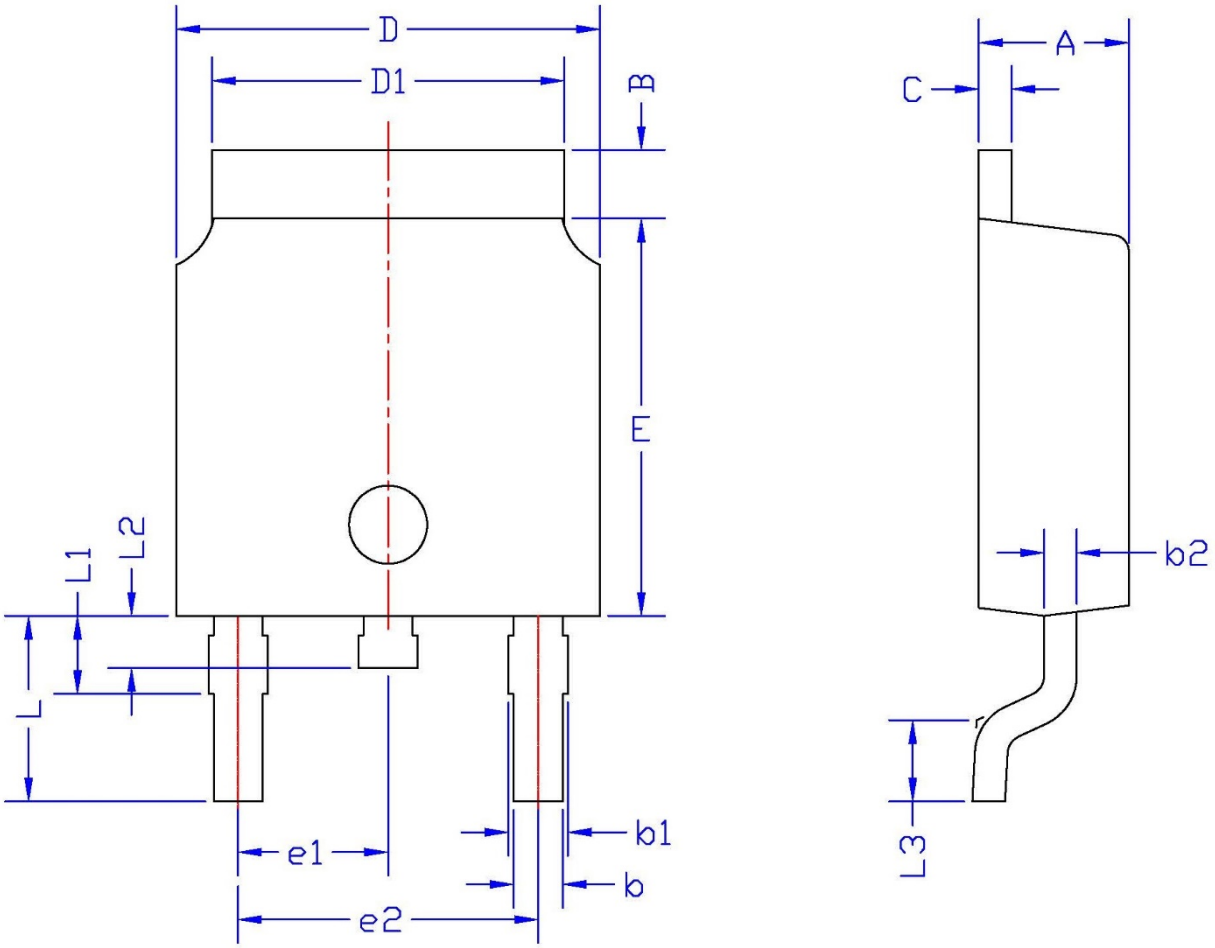




●Dimensions（TO-252)

Unit：mm

SYMBOL	min	max	SYMBOL	min	max
A	2.10	2.50	L2	0.60	1.20
b	0.50	0.90	L3	1.20	1.80
b1	0.70	1.20	B	0.80	1.30
b2	0.40	0.70	C	0.40	0.70
D	6.20	6.80	D1	5.10	5.60
E	5.80	6.40	e1	2.10	2.45
L	3.60	4.60	e2	4.40	4.80
L1	0.80	1.60			



●Dimensions（TO-220F)

UNIT:mm

SYMBOL	min	max	SYMBOL	min	max
A	4.20	4.80	E1	8.30	8.70
A1	2.50	2.90	e	2.40	2.70
A2	2.90	3.30	e1	4.95	5.25
b	0.40	0.80	F	2.50	2.90
b1	1.10	1.50	L	13.00	14.00
c	0.50	0.70	L1	3.00	4.00
D	9.80	10.60	⌀P	2.90	3.50
E	14.60	15.60