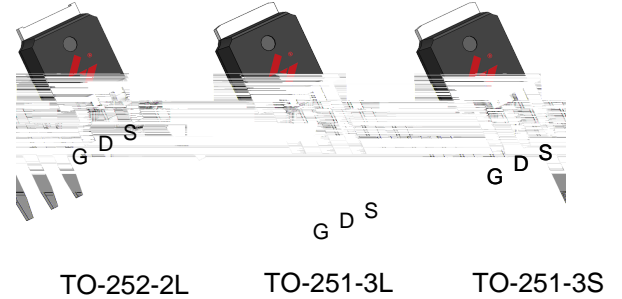


N-Channel Enhancement Mode MOSFET

Feature

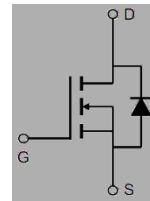
- 70V/70A
 $R_{DS(ON)} = 7.4 \Omega(\text{typ.}) @ V_{GS} = 10V$
- 100% Avalanche Tested
- Reliable and Rugged
- Halogen Free and Green Devices Available (RoHS Compliant)

Pin Description






Applications

- Power Management for Inverter Systems



N-Channel MOSFET

Ordering and Marking Information

 D HY1001 XYMXXXXXX	 U HY1001 XYMXXXXXX	 V HY1001 XYMXXXXXX	Package Code D: TO-252-2L U: TO-251-3L V: TO-251-3S Date Code XYMXXXXXX
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Note: HUAYI lead-free products contain no soldering compounds/die attach materials and 100% matte tin plate Termination finish; which are fully compliant with RoHS. HUAYI lead-free products meet or exceed the lead-free requirements of IPC/JEDEC J-STD-020 for MSL classification at lead-free peak reflow temperature. HUAYI defines "Green" to mean lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500ppm by weight).

HUAYI reserves the right to make changes, corrections, enhancements, modifications, and improvements to this product and/or to this document at any time without notice.

HY1001D/U/V

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (Tc=25°C Unless otherwise Noted)				
V _{DSS}	Drain-Source Voltage		70	V
V _{GSS}	Gate-Source Voltage		±20	V
T _J	Junction Temperature Range		-55 to 175	°C
T _{STG}	Storage Temperature Range		-55 to 175	°C
I _S	Source Current-Continuous(Body Diode)	Tc=25°C	70	A
Mounted on Large Heat Sink				
I _{DM}	Pulsed Drain Current *	Tc=25°C	270	A
I _D	Continuous Drain Current	Tc=25°C	70	A
		Tc=100°C	49.5	A
P _D	Maximum Power Dissipation	Tc=25°C	75	W
		Tc=100°C	37.5	W
R _{θJC}	Thermal Resistance, Junction-to-Case		2	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient **		110	°C/W
E _{AS}	Single Pulsed-Avalanche Energy ***	L=0.3 μs	205	J

Note: * Repetitive rating; pulse width limited by max. junction temperature.

** Surface mounted on FR-4 board.

*** Limited by T_J max, starting T_J=25°C, L = 0.3 μs, R_G = 25Ω, V_{GS} = 10V.

Electrical Characteristics (Tc = 25°C Unless otherwise Noted)

Symbol	Parameter	Test Conditions	HY1001			Unit
			Min	Typ.	Max	
Static Characteristics						

BV_{DSS} Drain-Source Breakdown Voltage V_{GS}=0V

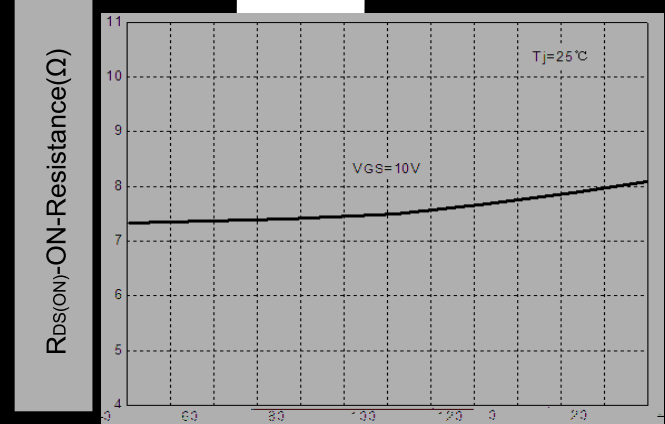
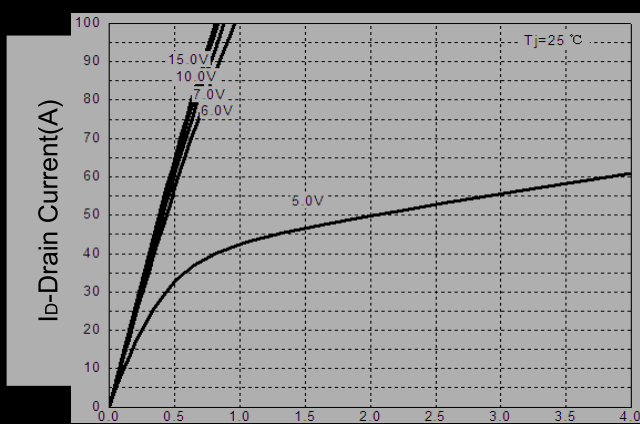
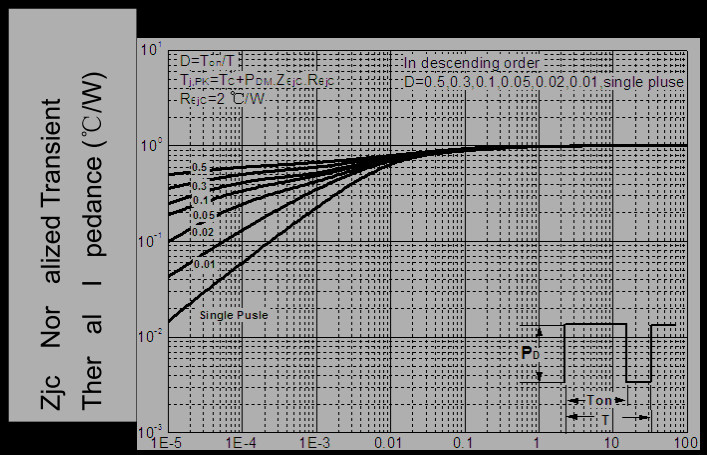
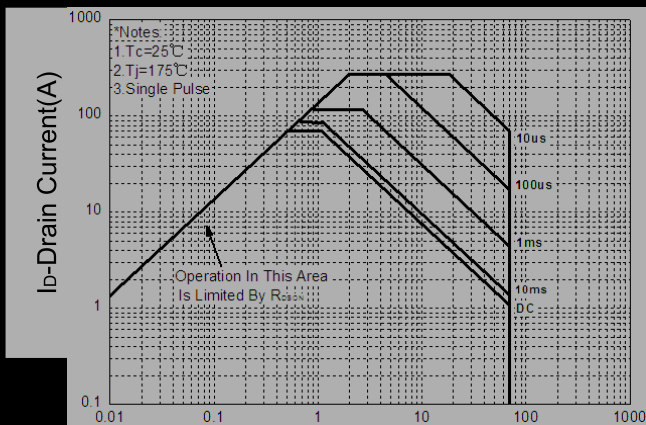
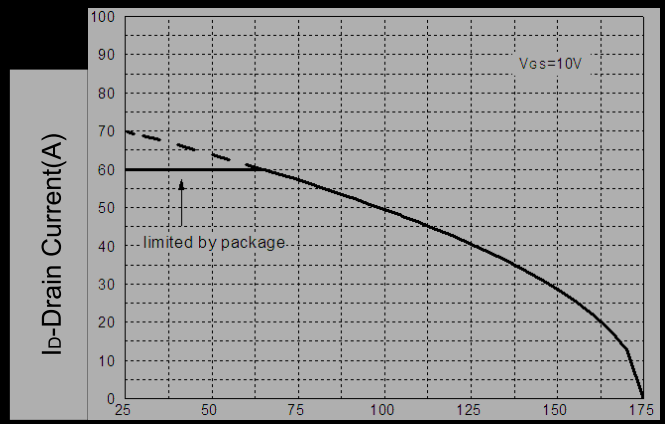
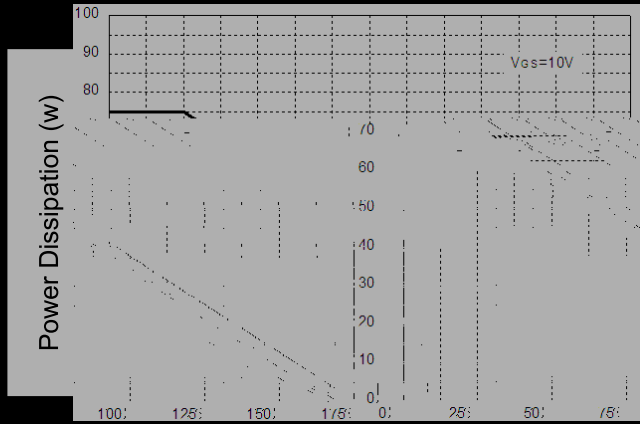
HY1001D/U/V

Electrical Characteristics (Cont.) (Tc =25°C Unless otherwise Noted)

Symbol	Parameter	Test Conditions	HY1001			Unit
			Min	Typ.	Max	

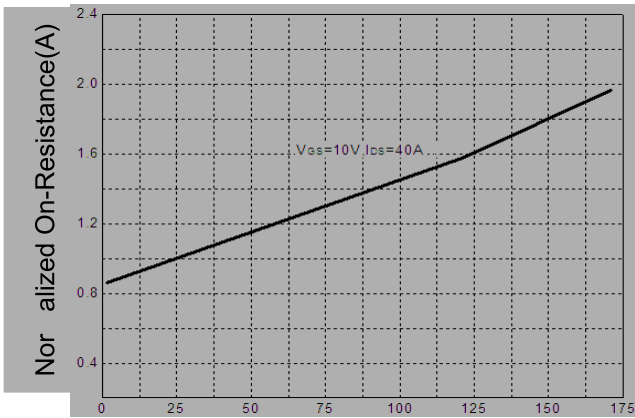
Dynamic Characteristics

R_G Gate Resist



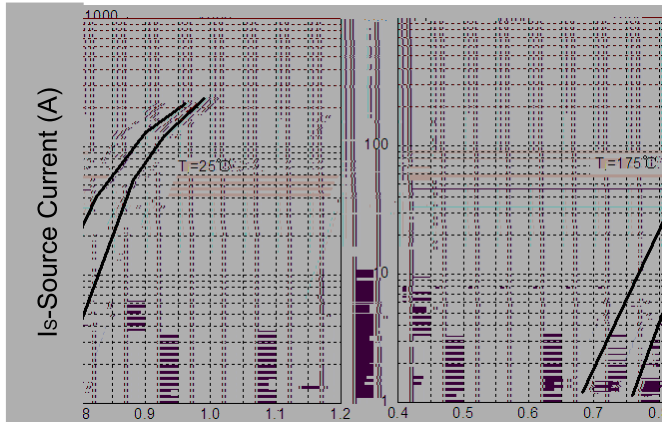
Typical Operating Characteristics(Cont.)

Fig re 7: On-Resistance vs. Temperature



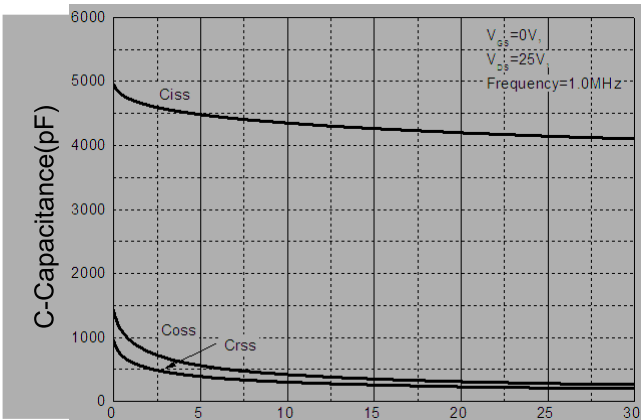
Tj-Junction Temperature (°C)

Fig re 8: Source-Drain Diode Forward



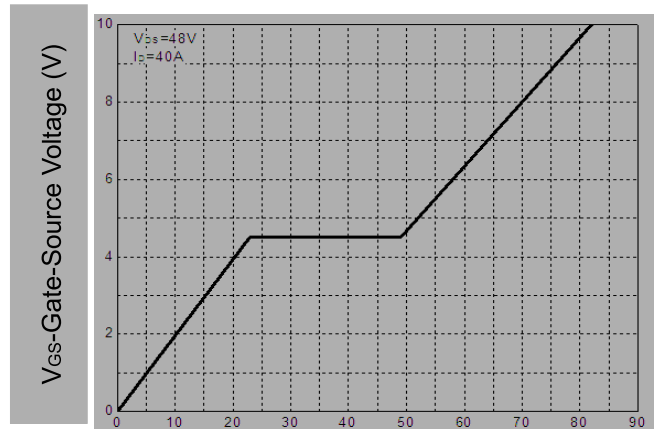
Vsd-Source-Drain Voltage(V)

Fig re 9: Capacitance Characteristics



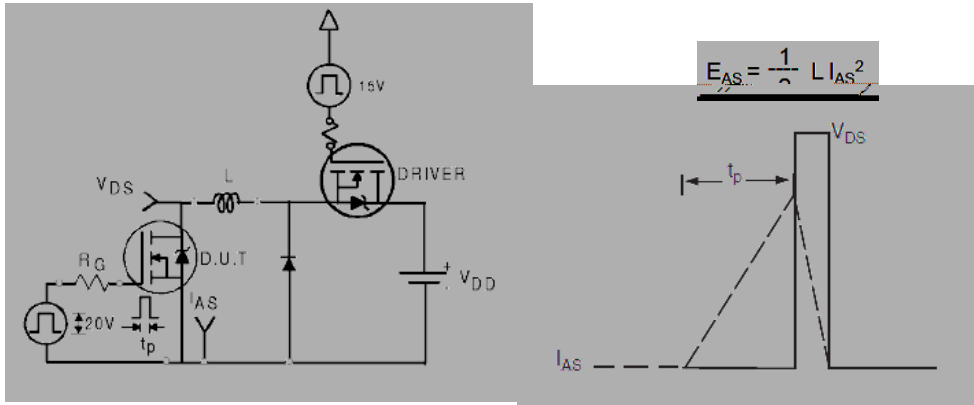
Vds-Drain-Source Voltage (V)

Fig re 10: Gate Charge Characteristics

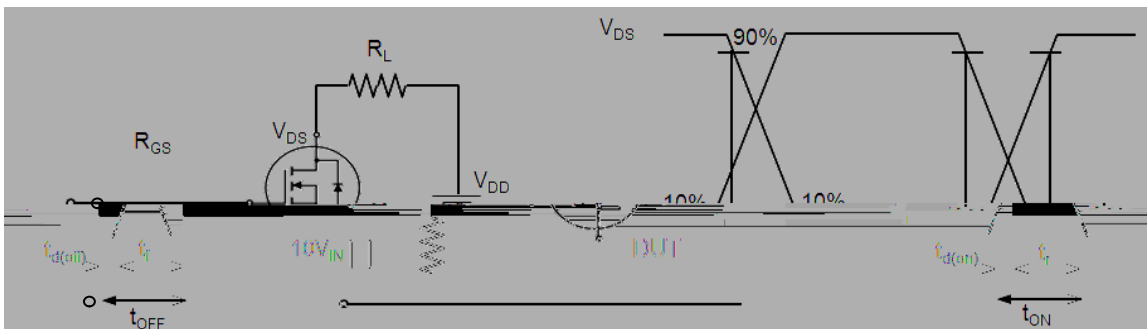


Qg-Gate Charge (nC)

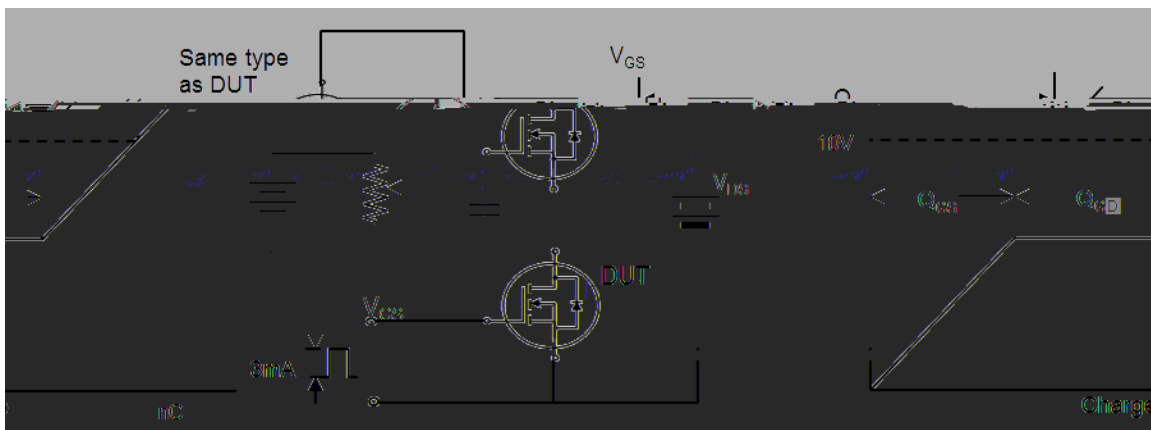
Avalanche Test Circuit



Switching Time Test Circuit



Gate Charge Test Circuit



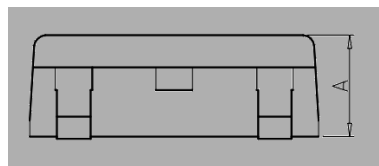
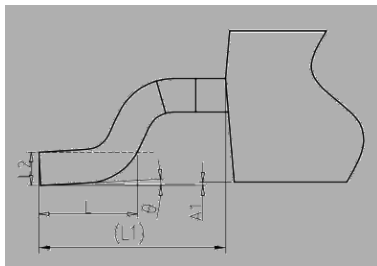
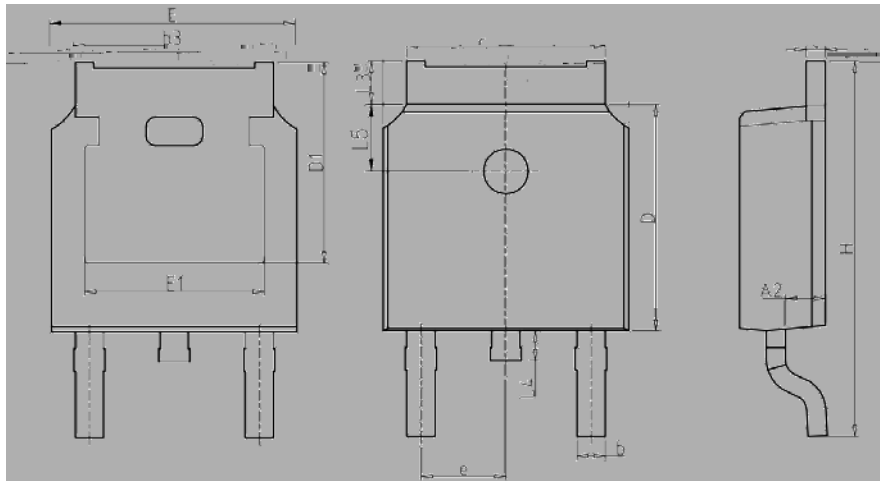
Device Per Unit

Package Type	Unit	Q antity
T -252-2L	Tube	75
T -252-2L	Reel	2500
T -251-3L	Tube	75
T -251-3S	Tube	75

Package Information

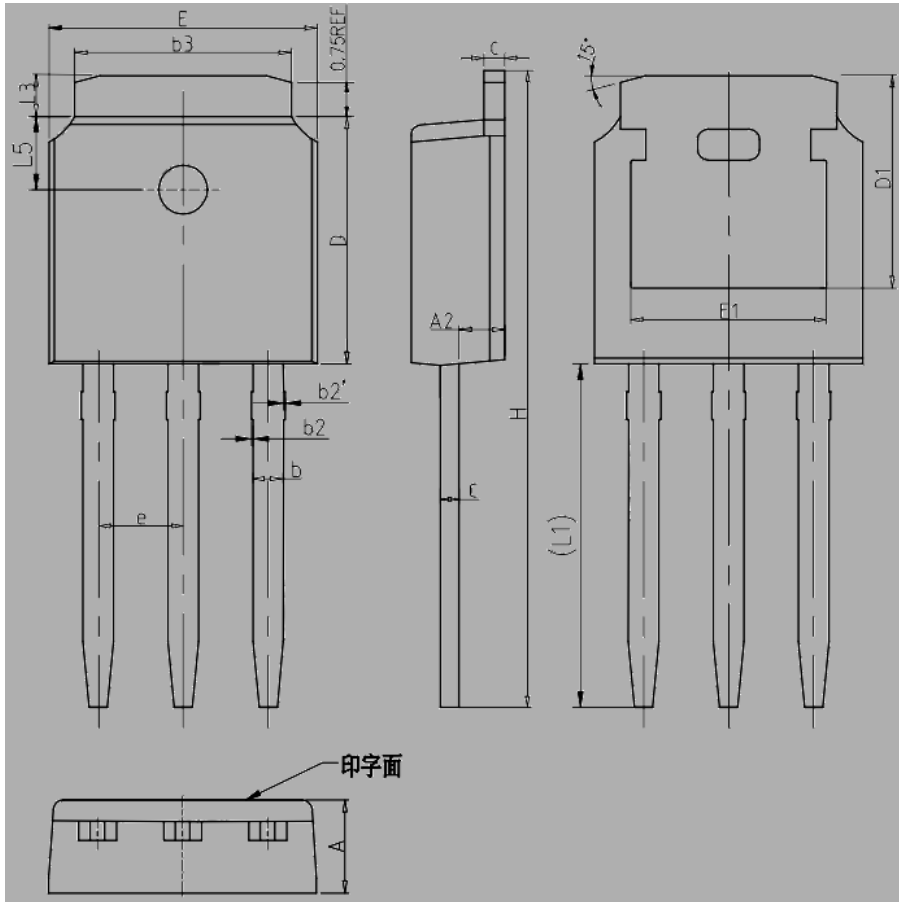
TO-252-2L

C MM N DIMENSI NS



SYMB L	C MM N DIMENSI NS		
	MIN	N M	MAX
A	2.20	2.30	2.40
A1	0.00	-	0.20
A2	0.97	1.07	1.17
b	0.68	0.78	0.90
b3	5.20	5.33	5.50
c	0.43	0.53	0.63
D	5.98	6.10	6.22
D1	5.30REF		
E	6.40	6.60	6.80
E1	4.63	-	-
e	2.286BSC		
H	9.40	10.10	10.50
L	1.38	1.50	1.75
L1	2.90REF		
L2	0.51BSC		
L3	0.88	-	1.28
L4	-	-	1.00
L5	1.65	1.80	1.95
θ	0°	-	8°

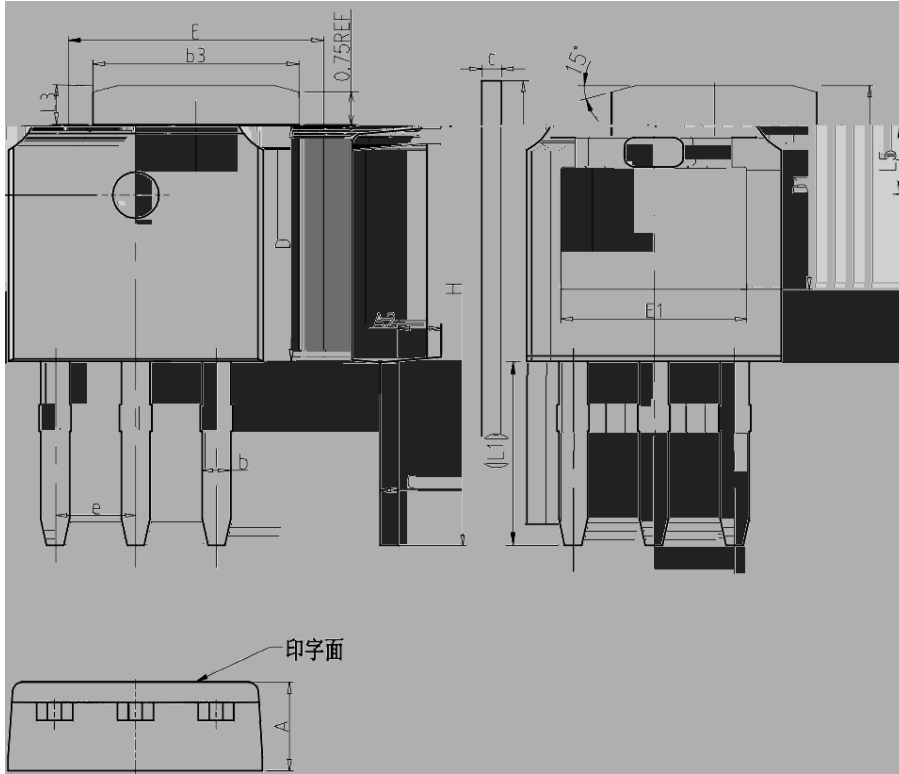
TO-251-3L



C MM N DIMENSI NS

SYMB L			
	MIN	N M	MAX
A	2.20	2.30	2.40
A2	0.97	1.07	1.17
b	0.68	0.78	0.90
b2	0.00	0.04	0.10
b2'	0.00	0.04	0.10
b3	5.20	5.33	5.50
c	0.43	0.53	0.63
D	5.98	6.10	6.22
D1	5.30REF		
E	6.40	6.60	6.80
E1	4.63	-	-
e	2.286BSC		
H	16.22	16.52	16.82
L1	9.15	9.40	9.65
L3	0.88	1.02	1.28
L5	1.65	1.80	1.95

TO-251-3S



C MM N DIMENSI NS

SYMB L			
	MIN	N M	MAX
A	2.20	2.30	2.40
A2	0.97	1.07	1.17
b	0.68	0.78	0.90
b3	5.20	5.33	5.50
c	0.43	0.53	0.63
D	5.98	6.10	6.22
D1	5.30REF		
E	6.40	6.60	6.80
E1	4.63	-	-
e	2.286BSC		
H	10.00	11.22	11.44
L1	3.90	4.10	4.30
L3	0.88	1.02	1.28
L5	1.65	1.80	1.95

Table 1.SnPb Eutectic Process – Classification Temperatures (Tc)

Package Thickness	Volume mm ³ <350	Volume mm ³ ≥350
<2.5	235 °C	220 °C
≥2.5	220 °C	220 °C

Table 2.Pb-free Process – Classification Temperatures (Tc)

Package Thickness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ ≥2000
<1.6	260 °C	260 °C	260 °C
1.6 – 2.5	260 °C	250 °C	245 °C
≥2.5	250 °C	245 °C	245 °C

Reliability Test Program

Test item	Method	Description
SOLDERABILITY	JESD-22, B102	5 Sec, 245°C
HTRB	JESD-22, A108	168 Hrs/500 Hrs/1000Hrs, Bias@150°C
PCT	JESD-22, A102	96 Hrs, 100%RH, 2atm, 121°C
TCT	JESD-22, A104	250/500/000 Cycles, -55°C~150°C

Customer Service

Worldwide Sales and Service: sales@huaya.co

Technical Support:Technology@huaya.co

Huayi Microelectronics Co., Ltd.

No.8928,Shangji Road,Economic and Technological Development Zone,Xi'an,China

TEL: (86-029) 86685706

FAX: (86-029) 86685705

E-mail: sales@huaya.co

Web net: www.huaya.co