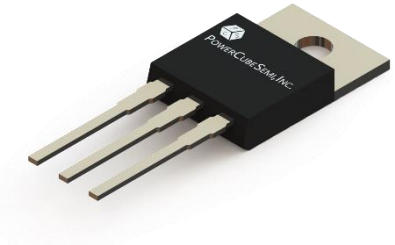
JST06 Series

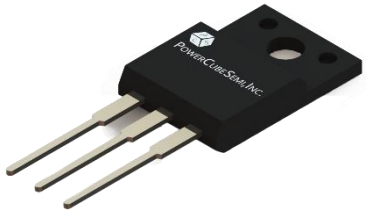
600/800V-Level 6A TRIACs

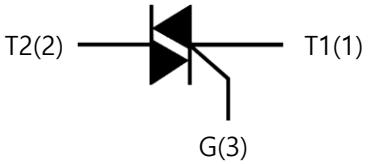
PowerCubeSemi, Inc.
Potential · Convergence · Smart

Description

With high ability to withstand the shock loading of large current, JST06 series TRIACs provide high dv/dt rate with strong resistance to electromagnetic interface. With high commutation performances, 3 quadrants products especially recommended for use on inductive load. From all three terminals to external heatsink, JST06A provides a rated insulation voltage of 2,500 VRMS, and JST06F provides a rated insulation voltage of 2,000 VRMS, complying with UL standards. All the packages listed above are RoHS compliant.







PKG type : TO-220A, TO-220C, TO-220F, TO-251

RoHS

Absolute Maximum Ratings

Symbol	Parameter		Value	Unit
V_{DRM}	Repetitive Peak Off-State Voltage (T_J=25℃)		600/800	V
V_{RRM}	Repetitive Peak Reverse Voltage (T_J=25℃)		600/800	A
$I_{T(RMS)}$	RMS On-State Current	TO-220A / TO-220F / TO-251 (T_C=100℃)	6	A
		TO-220C (T_C=105℃)		
I_{TSM}	Non-Repetitive Surge Peak On-State Current (full cycle, f=50Hz)		60	A
I^2t	I^2t Value for Fusing (tp=10ms)		18	A^2s
dI/dt	Critical Rate of Rise of On-State Current (I_G=2×I_{GT})	Ⅰ·Ⅱ·Ⅲ	50	A/μs
		Ⅳ	10	
T_J	Operating Junction Temperature Range		-40 to 125	℃
T_{stg}	Storage Junction Temperature Range		-40 to 150	℃
I_{GM}	Peak Gate Current		2	A
$P_{G(AV)}$	Average Gate Power Dissipation		1	W
P_{GM}	Peak Gate Power		5	W

Electrical Characteristics

T_J=25℃ unless otherwise specified

3 Quadrants

Symbol	Test Condition	Quadrant		Numerical				Unit
				TW	SW	CW	BW	
I_{GT}	V_D=12V, R_L=30Ω	Ⅰ·Ⅱ·Ⅲ	MAX	5	10	35	50	mA
V_{GT}	V_D=12V, R_L=30Ω	Ⅰ·Ⅱ·Ⅲ	MAX	1.5				V
V_{GD}	V_D=V_{DRM}, T_J=125℃, R_L=3.3kΩ	Ⅰ·Ⅱ·Ⅲ	MIN	0.2				V
I_L	I_G=1.2I_{GT}	Ⅰ·Ⅲ	MAX	10	15	50	70	mA
		Ⅱ		15	25	60	80	
I_H	I_{TM}=0.2A		MAX	6	10	35	60	mA
dV/dt	V_D=2/3V_{DRM} Gate Open T_J=125℃		MIN	50	100	400	1000	V/μs
(dI/dt)C	Without Sunbber T_J=125℃		MIN	1.2	2.4	3.5	5.3	A/ms

4 Quadrants

Symbol	Test Condition	Quadrant		Numerical		Unit
				C	B	
I_{GT}	V_D=12V, R_L=30Ω	Ⅰ·Ⅱ·Ⅲ	MAX	25	50	mA
V_{GT}	V_D=12V, R_L=30Ω	Ⅳ	MAX	50	70	V
		ALL		1.5		
V_{GD}	V_D=V_{DRM}, T_J=125℃, R_L=3.3kΩ	ALL	MIN	0.2		V
I_L	I_G=1.2I_{GT}	Ⅰ·Ⅲ·Ⅳ	MAX	50	70	mA
		Ⅱ		60	80	
I_H	I_{TM}=0.2A		MAX	40	60	mA
dV/dt	V_D=2/3V_{DRM} Gate Open T_J=125℃		MIN	200	500	V/μs

Electrical Characteristics

T_J=25℃ unless otherwise specified

Static Characteristics

Symbol	Parameter		Value (MAX)	Unit
V_{TM}	I_{TM}=8.5A, tp=380us	T_J=25℃	1.5	V
V_{TO}	Threshold Voltage	T_J=125℃	0.93	V
R_d	Dynamic Resistance	T_J=125℃	45	mΩ
I_{DRM}	V_D=V_{DRM}, V_R=V_{RRM}	T_J=25℃	5	mA
I_{RRM}		T_J=125℃	1	mA

Thermal Resistances

Symbol	Parameter		Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case	TO-220A / TO-220F	2.9	℃/W
		TO-220C	2.3	
		TO-251	2.7	

Package Marking and Ordering Information

Device Marking	V_{DRM} / V_{RRM} [V]	IGT(Ma)		Package	Packing Method	Quantity
		Ⅰ·Ⅱ·Ⅲ	Ⅳ			
JST06A-600/800C	600 / 800	25	50	TO-220A	Tube	50
JST06A-600/800B		50	70			
JST06C-600/800C		25	50	TO-220C		
JST06C-600/800B		50	70			
JST06F-600/800C		25	50	TO-220F		
JST06F-600/800B		50	70			
JST06H-600/800C		25	50	TO-251		
JST06H-600/800B		50	70			

Device Marking	V_{DRM} / V_{RRM} [V]	IGT(Ma)	Package	Packing Method	Quantity
JST06A-TW	600 / 800	5	TO-220A	Tube	50
JST06A-SW		10			
JST06A-CW		35			
JST06A-BW		50			
JST06C-TW		5	TO-220C		
JST06C-SW		10			
JST06C-CW		35			
JST06C-BW		50			
JST06F-TW		5	TO-220F		
JST06F-SW		10			
JST06F-CW		35			
JST06F-BW		50			
JST06H-TW		5	TO-251		80
JST06H-SW		10			
JST06H-CW		35			
JST06H-BW		50			

Typical Characteristics

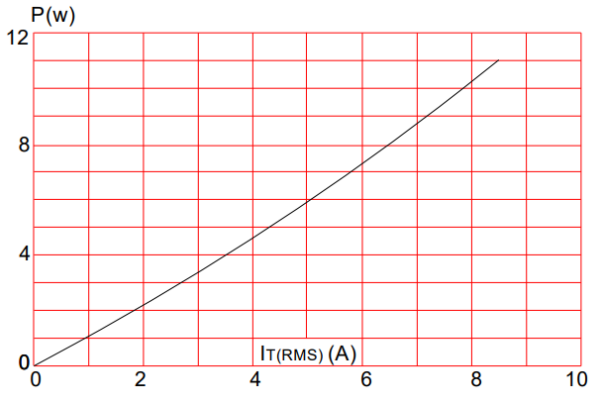


Figure 1. Maximum Power Dissipation vs. RMS On-State Current

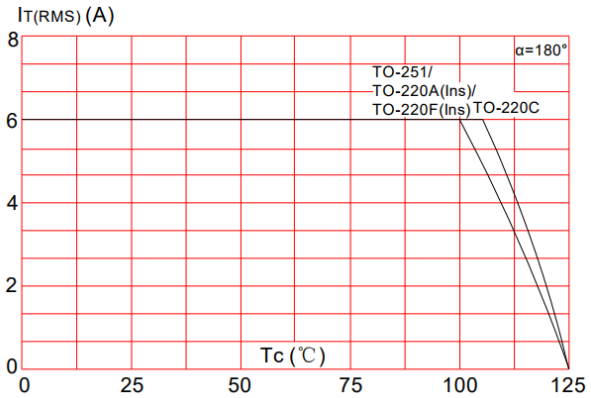


Figure 2. RMS On-State Current vs. Case Temperature

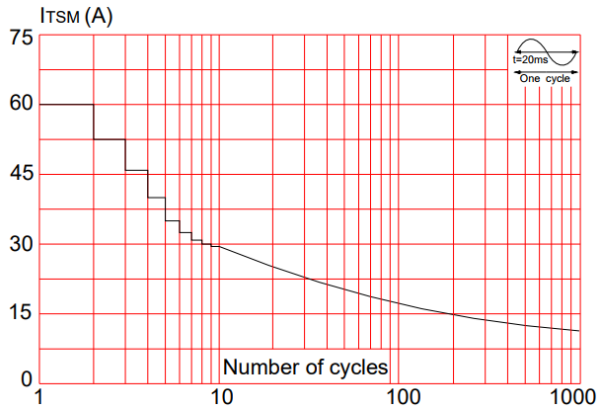


Figure 3. Surge Peak On-State Current vs. Number of Cycles

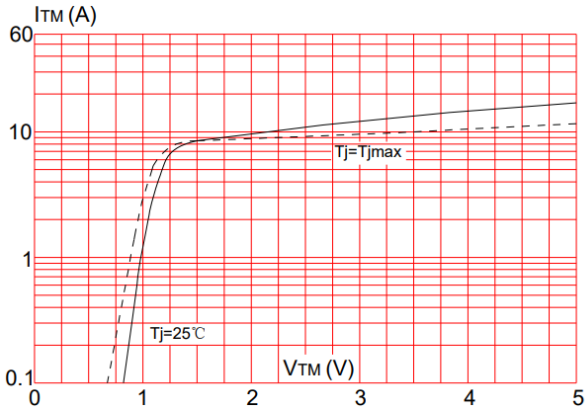


Figure 4. On-State Characteristics (Maximum Values)

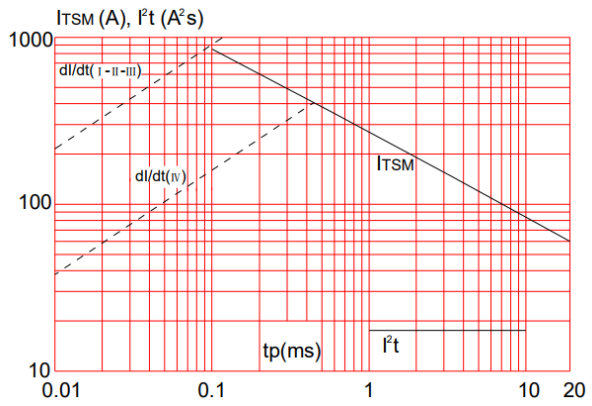


Figure 5. Non-Repetitive Surge Peak On-State Current for a Sinusoidal Pulse with width tp<20ms and Corresponding Value of I²T (Ⅰ·Ⅱ·Ⅲ : dI/dt<50A/μs; Ⅳ : dI/dt<10A/μs)

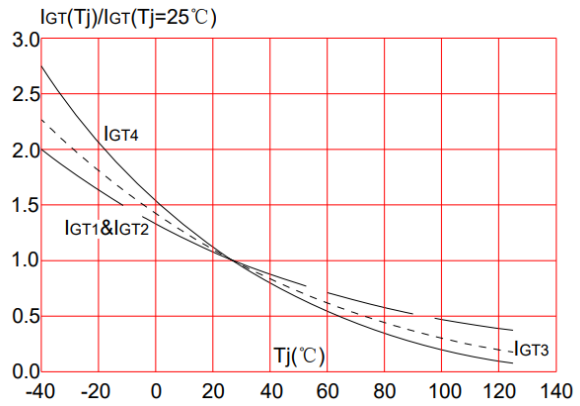


Figure 6. Relative Variations of Gate Trigger Current vs. Junction Temperature

Typical Characteristics

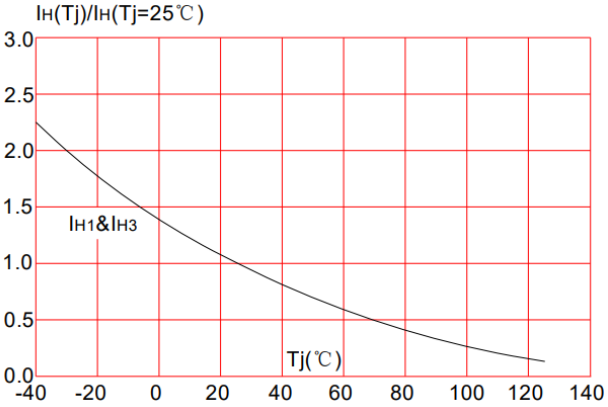


Figure 7. Relative Variations of Holding Current vs. Junction Temperature

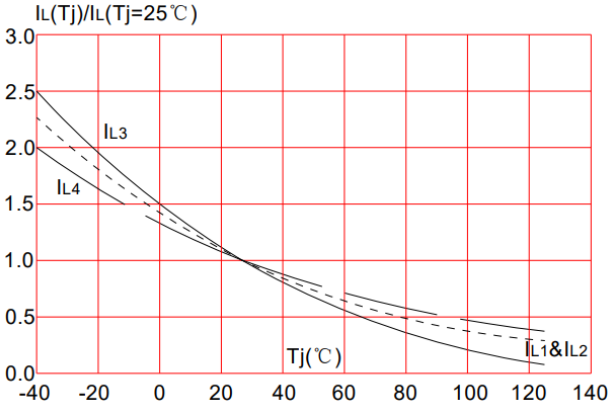
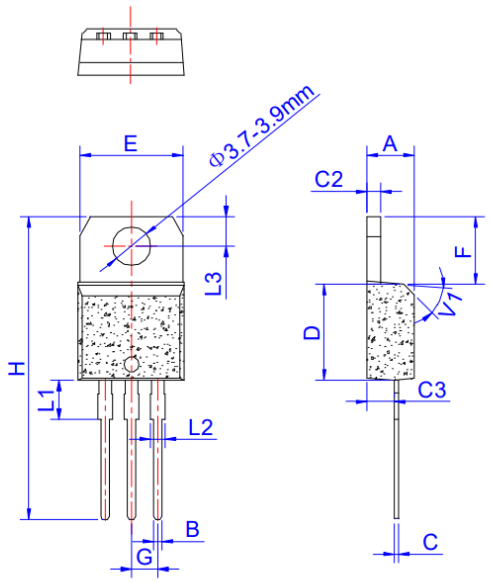


Figure 8. Relative Variations of Latching Current vs. Junction Temperature

Package Outline

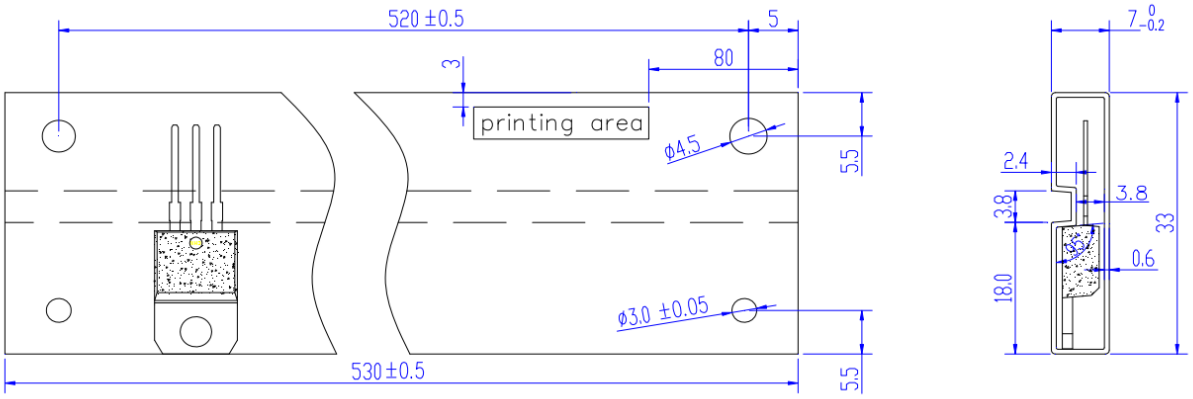
[TO-220A]

Unit : mm



SYMBOL	DIMENSIONS			NOTES
	MIN	NOM	MAX	
A	4.40		4.60	
B	0.61		0.88	
C	0.46		0.70	
C2	1.21		1.32	
C3	2.40		2.72	
D	8.60		9.70	
E	9.80		10.4	
F	6.25		6.85	
G	2.40		2.70	
H	28.0		29.8	
L1	3.45		4.5	
L2	1.14		1.70	
L3	2.65		2.95	
V1		45°		

Delivery Mode

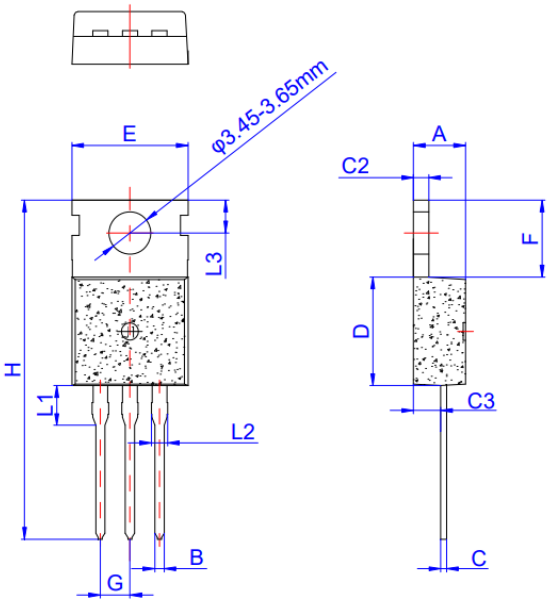


Package	Outline	Tube	Inner Box	Per Carton
TO-220A	TUBE	50	1,000	5,000

Package Outline

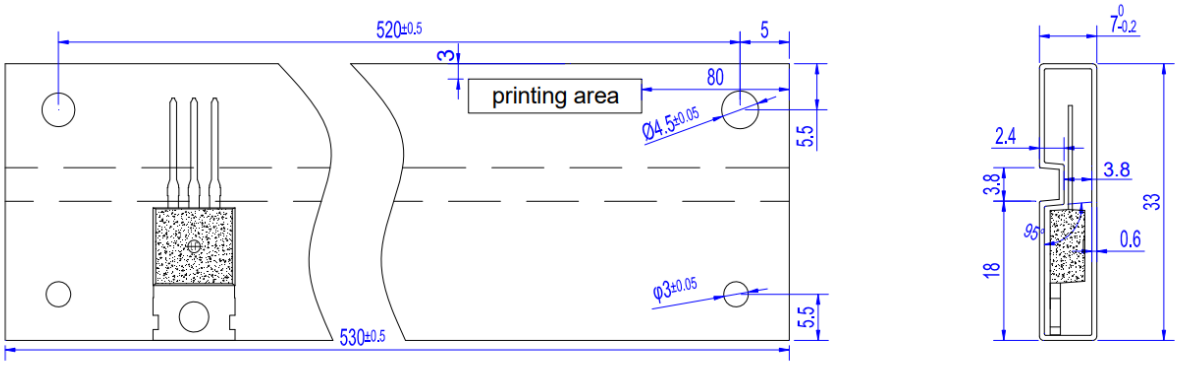
[TO-220C]

Unit : mm



SYMBOL	DIMENSIONS			NOTES
	MIN	NOM	MAX	
A	4.40		4.60	
B	0.70		0.90	
C	0.45		0.60	
C2	1.25		1.35	
C3	2.20		2.60	
D	8.90		9.90	
E	9.90		10.3	
F	6.30		6.90	
G	2.40		2.70	
H	28.0		29.8	
L1	2.70		3.30	
L2	1.14		1.70	
L3	2.65		2.95	

Delivery Mode

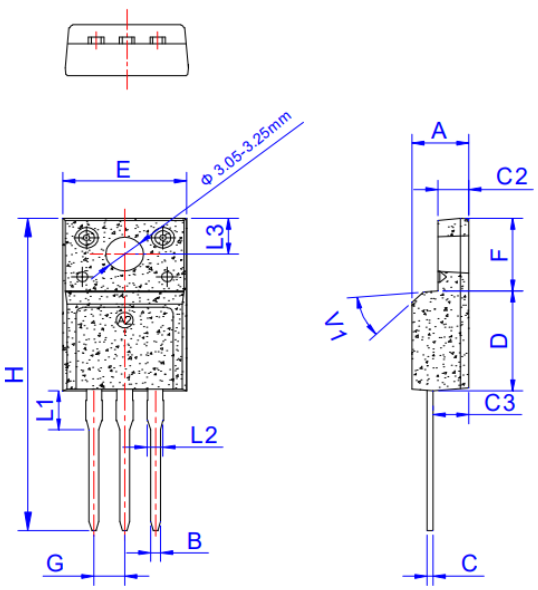


Package	Outline	Tube	Inner Box	Per Carton
TO-220C	TUBE	50	1,000	5,000

Package Outline

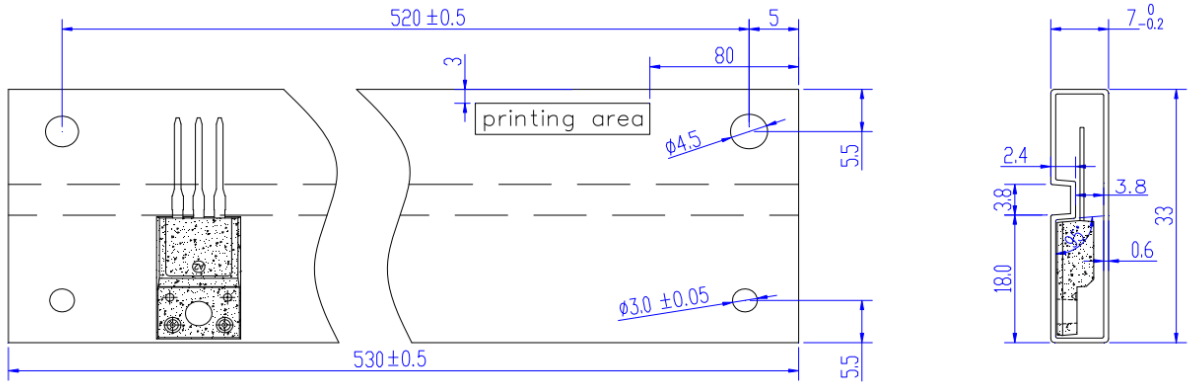
[TO-220H]

Unit : mm



SYMBOL	DIMENSIONS			NOTES
	MIN	NOM	MAX	
A	4.50		4.90	
B	0.74	0.80	0.83	
C	0.47		0.65	
C2	2.45		2.75	
C3	2.60		3.00	
D	8.8		9.30	
E	9.80		10.4	
F	6.40		6.80	
G	2.40		2.70	
H	28.0		29.8	
L1	3.20		3.80	
L2	1.14		1.70	
L3	3.20		3.60	
V1		45°		

Delivery Mode



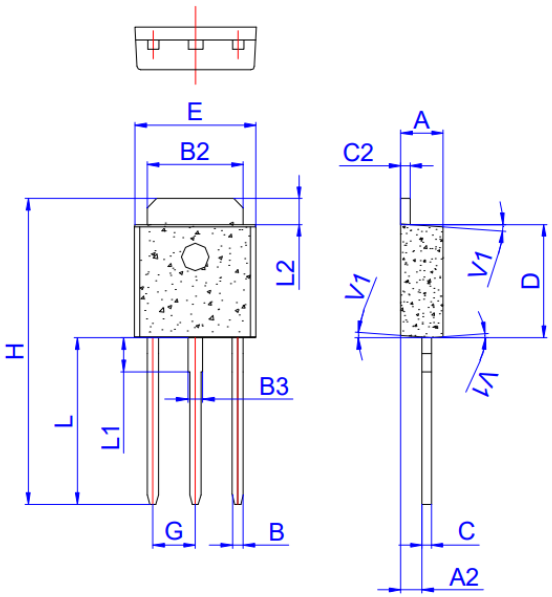
Package	Outline	Tube	Inner Box	Per Carton
TO-220H	TUBE	50	1,000	5,000

Package Outline

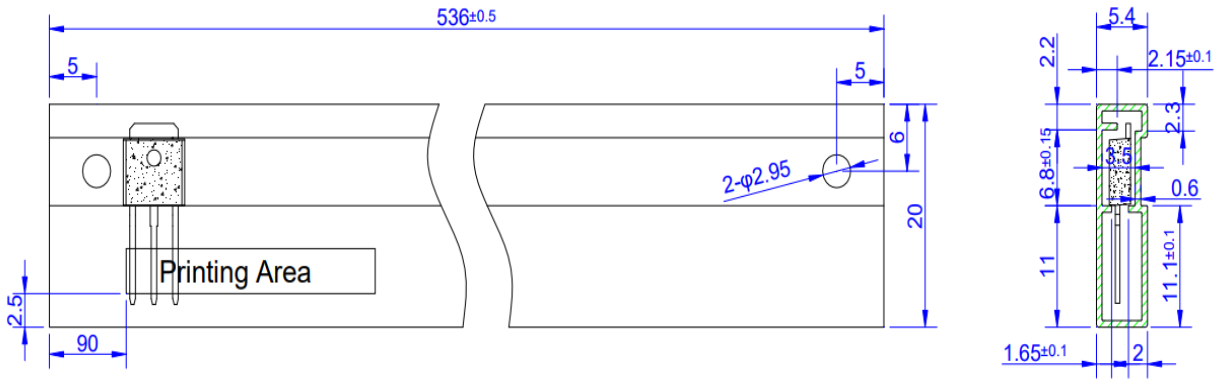
[TO-251]

Unit : mm

SYMBOL	DIMENSIONS			NOTES
	MIN	NOM	MAX	
A	2.20		2.40	
A2	1.00		1.30	
B	0.50		0.70	
C	5.10		5.40	
C2	0.70		1.00	
C3	0.45		0.62	
D	0.48		0.62	
E	6.00		6.20	
F	6.40		6.70	
G	2.20		2.40	
H	16.0		17.0	
L	8.90		9.40	
L1	1.80		2.20	
L2	1.25		1.55	
V1		4°		



Delivery Mode



Package	Outline	Tube	Inner Box	Per Carton
TO-251	TUBE	80	4,000	20,000