JST30 Series 30A TRIACs

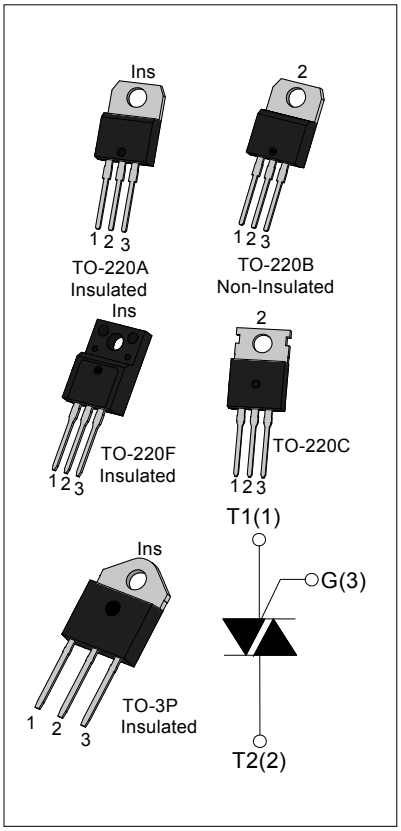
Rev.4.0

DESCRIPTION:

With high ability to withstand the shock loading of large current, it provides high dv/dt rate with strong resistance to electromagnetic interface. JST30 Series are snubberless triac (3 quadrants) product, which are especially recommended focus on inductive load for its high commutation performances.

From all three terminals to external heatsink, JST30A and JST30Z provide a rated insulation voltage of 2500 V_{RMS}, and JST30F provides a rated insulation voltage of 2000 V_{RMS}, complying with UL standards (File ref: E252906).

All the packages are RoHS compliant (2011/65/EU).



MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	30	A
V_{DRM} /V_{RRM}	600/800/1200/1600	V

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		T_{stg}	-40-150	℃
Operating junction temperature range		T_j	-40-125	℃
Repetitive peak off-state voltage (T_j=25℃)		V_{DRM}	600/800/1200/1600	V
Repetitive peak reverse voltage (T_j=25℃)		V_{RRM}	600/800/1200/1600	V
Non repetitive surge peak off-state voltage		V_{DSM}	V_{DRM} +100	V
Non repetitive peak reverse voltage		V_{RSM}	V_{RRM} +100	V
RMS on-state current	TO-220A(Ins)/ TO-220F(Ins) (T_C=55℃)	$I_{T(RMS)}$	30	A
	TO-220B(Non-Ins)/ TO-220C (T_C=75℃)			
	TO-3P(Ins) (T_C=90℃)			
Non repetitive surge peak on-state current (full cycle, F=50Hz)		I_{TSM}	300	A

I^2t value for fusing (tp=10ms)	I^2t	450	A^2s
Critical rate of rise of on-state current (I_G =2×I_{GT})	dI/dt	50	A/μs
Peak gate current	I_{GM}	4	A
Average gate power dissipation	$P_{G(AV)}$	1	W
Peak gate power	P_{GM}	10	W

ELECTRICAL CHARACTERISTICS (T_j=25℃ unless otherwise specified)

3 Quadrants：Voltage class in this form--V_{DRM} (Repetitive peak off-state voltage) and V_{RRM} (Repetitive peak reverse voltage) are both 600V or 800V.

Symbol	Test Condition	Quadrant		Value		Unit
				BW	CW	
I_{GT}	V_D =12V R_L =33Ω	Ⅰ-Ⅱ-Ⅲ	MAX	50	35	mA
V_{GT}		Ⅰ-Ⅱ-Ⅲ	MAX	1.3		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	80	70	mA
		Ⅱ		100	80	
I_H	I_T =100mA		MAX	75	50	mA
dV/dt	V_D=2/3V_{DRM} Gate Open T_j =125℃		MIN	1000	500	V/μs

3 Quadrants：Voltage class in this form--V_{DRM} (Repetitive peak off-state voltage) and V_{RRM} (Repetitive peak reverse voltage) are both 1200V or 1600V.

Symbol	Test Condition	Quadrant		Value		Unit
				BW	CW	
I_{GT}	V_D =12V R_L=33Ω	Ⅰ-Ⅱ-Ⅲ	MAX	50	35	mA
V_{GT}		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	90	70	mA
		Ⅱ		100	80	
I_H	I_T =100mA		MAX	80	60	mA
dV/dt	V_D=2/3V_{DRM} Gate Open T_j=125℃		MIN	1500	1000	V/μs

4 Quadrants：Voltage class in this form--V_{DRM} (Repetitive peak off-state voltage) and V_{RRM} (Repetitive peak reverse voltage) are both 600V or 800V.

Symbol	Test Condition	Quadrant		Value		Unit
				B	C	
I_{GT}	V_D =12V R_L =33Ω	Ⅰ-Ⅱ-Ⅲ	MAX	50	25	mA
		Ⅳ		70	50	
V_{GT}		ALL	MAX	1.3		V
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	80	70	mA
		Ⅱ		100	90	
I_H	I_T =100mA		MAX	75	60	mA
dV/dt	V_D=2/3V_{DRM} Gate Open T_j =125℃		MIN	500	200	V/μs

STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)	Unit
V_{TM}	I_{TM} =35A tp=380μs	T_j=25℃	1.5	V
V_{TO}	Threshold voltage	T_j=125℃	0.95	V
R_d	Dynamic resistance	T_j=125℃	12	mΩ
I_{DRM}	V_D =V_{DRM} V_R =V_{RRM}	T_j=25℃	5	μA
I_{RRM}		T_j=125℃	3	mA

THERMAL RESISTANCES

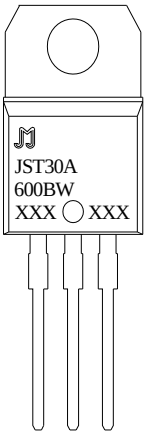
Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-220A(Ins)	1.5	℃/W
		TO-220B(Non-Ins)/ TO-220C	1.1	
		TO-220F(Ins)	1.7	
		TO-3P(Ins)	0.67	

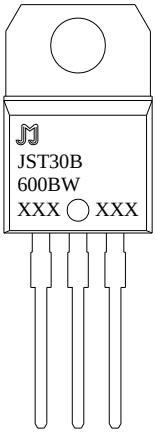
ORDERING INFORMATION

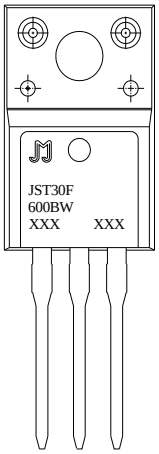
J ST 30 A -600 BW -/

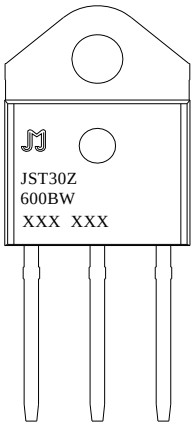
- J: JieJie Microelectronics Co.,Ltd
- ST: Triacs
- 30: $I_{T(RMS)}$:30A
- A: C:TO-220C; Z:TO-3P(Ins); A:TO-220A(Ins); F:TO-220F(Ins); B:TO-220B(Non-Ins)
- -600: 600:V_{DRM} /V_{RRM}≥600V; 800:V_{DRM} /V_{RRM}≥800V; 1200:V_{DRM} /V_{RRM}≥1200V; 1600:V_{DRM} /V_{RRM}≥1600V
- BW: BW:I_{GT1-3}≤50mA; CW:I_{GT1-3}≤35mA; B:I_{GT1-3}≤50mA I_{GT4}≤70mA; C:I_{GT1-3}≤25mA I_{GT4}≤50mA
- -/: Blank: Tube

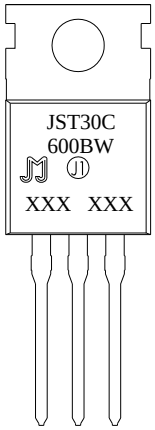
MARKING











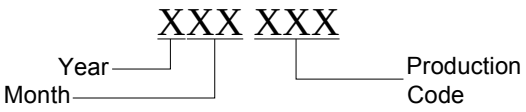


FIG.1: Maximum power dissipation versus RMS on-state current

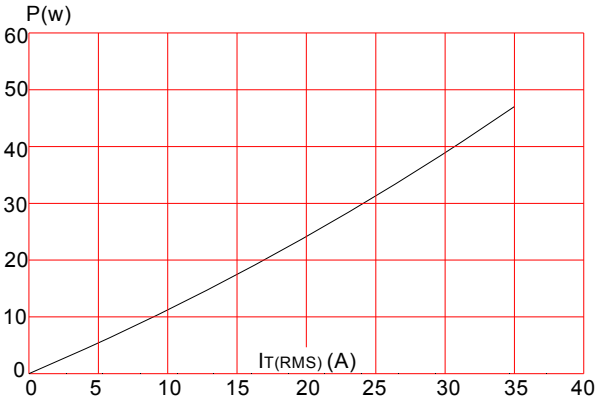


FIG.2: RMS on-state current versus case temperature

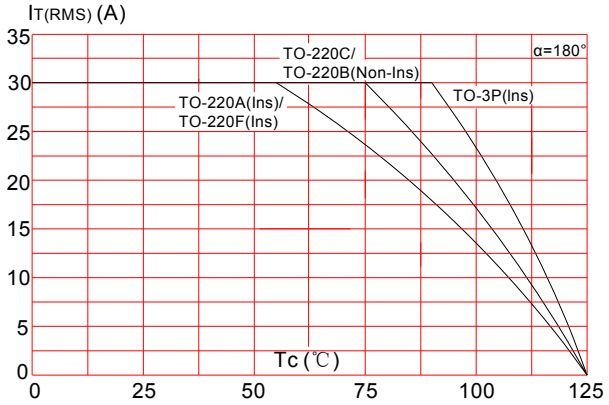


FIG.3: Surge peak on-state current versus number of cycles

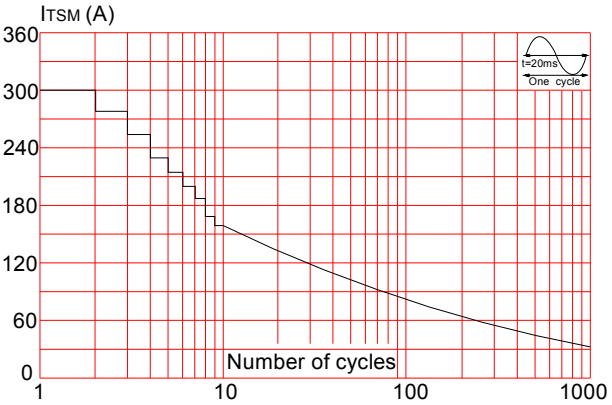


FIG.4: On-state characteristics (maximum values)

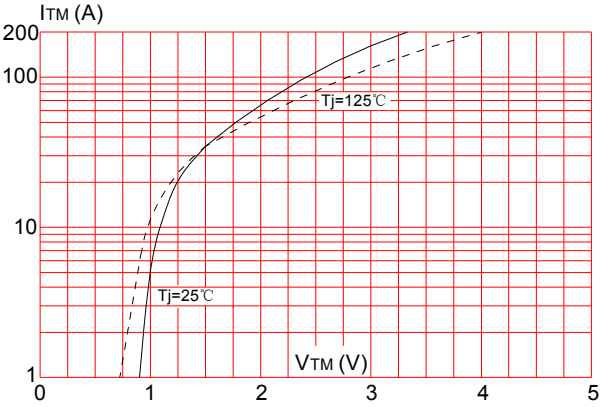


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<20ms, and corresponging value of I^2t (dI/dt < 50A/μs)

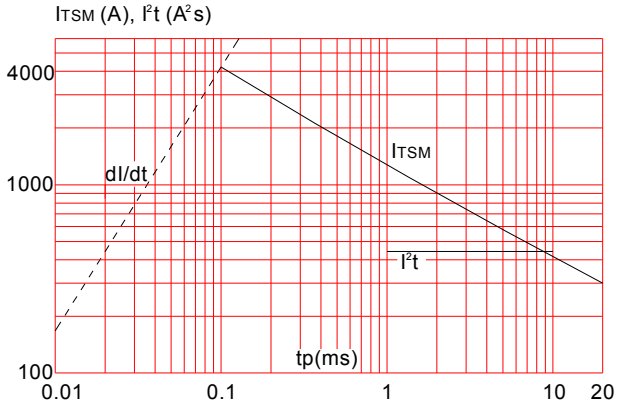
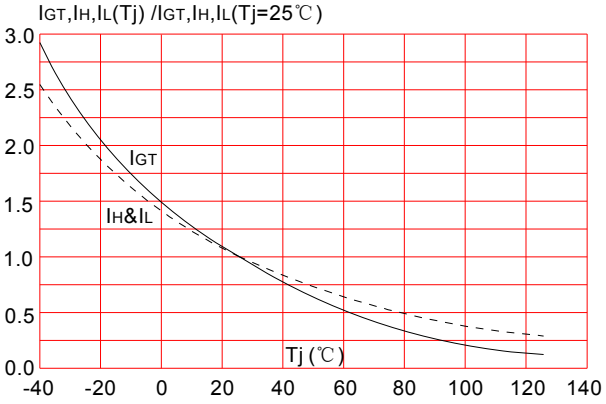


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



ORDERING INFORMATION

Order code	Voltage V_{DRM}/V_{RRM} (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
JST30A-600/800/1200/1600BW	600/800/ 1200/1600	50	TO-220A (Ins)	50	Tube
JST30A-600/800/1200/1600CW		35			
JST30B-600/800/1200/1600BW		50	TO-220B (Non-Ins)		
JST30B-600/800/1200/1600CW		35			
JST30C-600/800/1200/1600BW		50	TO-220C		
JST30C-600/800/1200/1600CW		35			
JST30F-600/800/1200/1600BW		50	TO-220F (Ins)		
JST30F-600/800/1200/1600CW		35			
JST30Z-600/800/1200/1600BW		50	TO-3P(Ins)	30	
JST30Z-600/800/1200/1600CW		35			

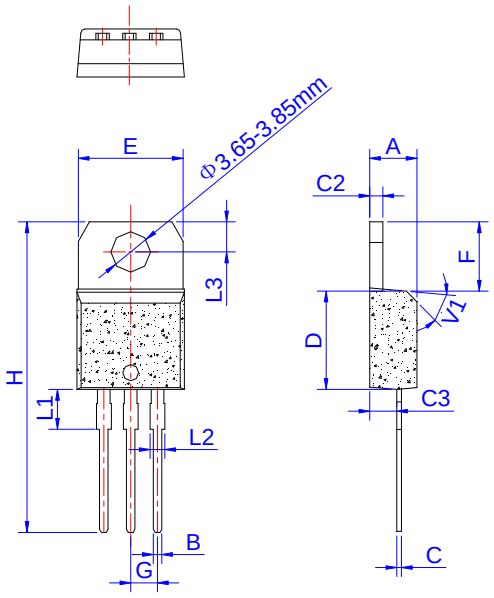
ORDERING INFORMATION

Order code	Voltage V_{DRM}/V_{RRM} (V)	IGT(mA)		Package	Base qty. (pcs)	Delivery mode
		Ⅰ-Ⅱ-Ⅲ	Ⅳ			
JST30A-600/800/1200/1600B	600/800/ 1200/1600	50	70	TO-220A (Ins)	50	Tube
JST30A-600/800/1200/1600C		25	50			
JST30B-600/800/1200/1600B		50	70	TO-220B (Non-Ins)		
JST30B-600/800/1200/1600C		25	50			
JST30C-600/800/1200/1600B		50	70	TO-220C		
JST30C-600/800/1200/1600C		25	50			
JST30F-600/800/1200/1600B		50	70	TO-220F (Ins)		
JST30F-600/800/1200/1600C		25	50			
JST30Z-600/800/1200/1600B		50	70	TO-3P(Ins)	30	
JST30Z-600/800/1200/1600C		25	50			

Document Revision History

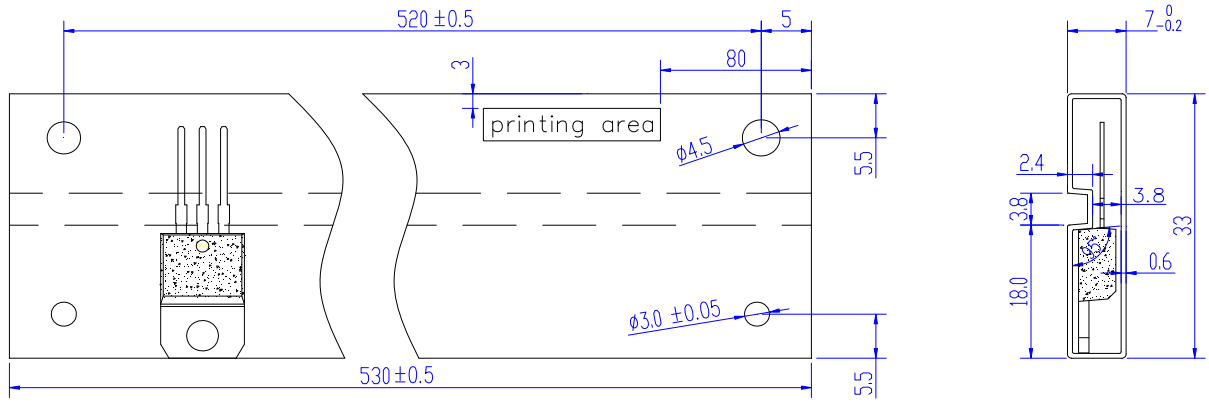
Date	Revision	Changes
Oct 15, 2018	2	Last updated
Sep 16, 2021	3	Add Vto & Rd
Dec 30, 2021	4	Add package TO-220C

PACKAGE MECHANICAL DATA



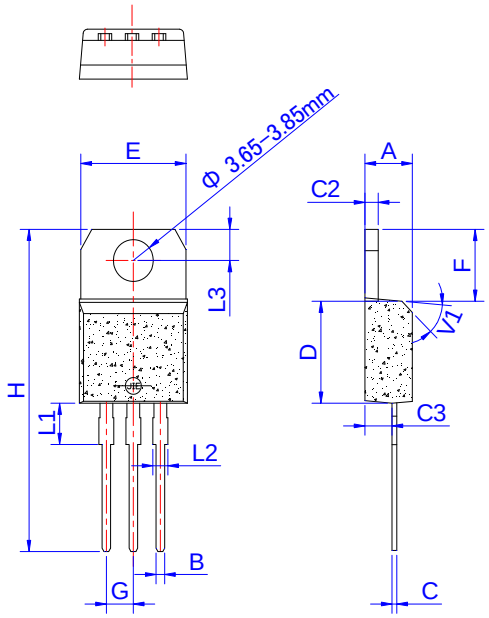
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.80		10.4	0.386		0.409
F	6.55		6.95	0.258		0.274
G	2.40		2.70	0.094		0.106
H	28.0		29.8	1.102		1.173
L1		3.75			0.148	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	

DELIVERY MODE



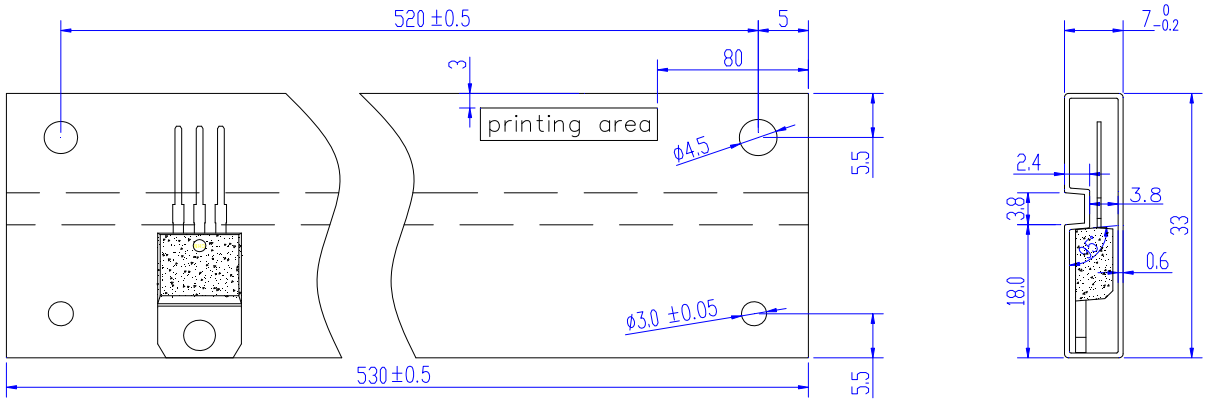
PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-220A	TUBE	50	1,000	5,000

PACKAGE MECHANICAL DATA



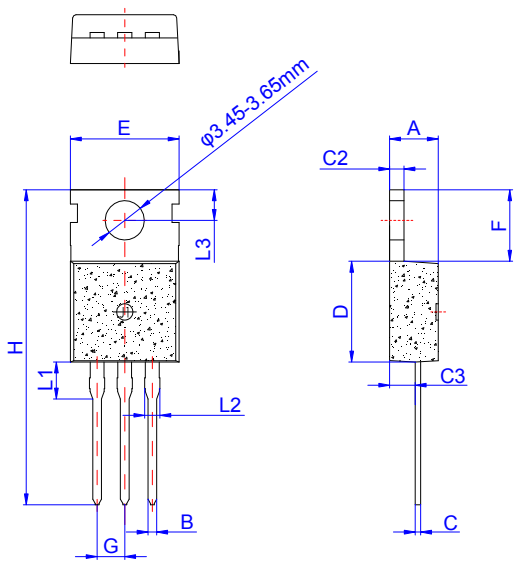
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.60		10.4	0.378		0.409
F	6.20		6.60	0.244		0.260
G	2.40		2.70	0.094		0.106
H	28.0		29.8	1.102		1.173
L1		3.75			0.147	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	

DELIVERY MODE



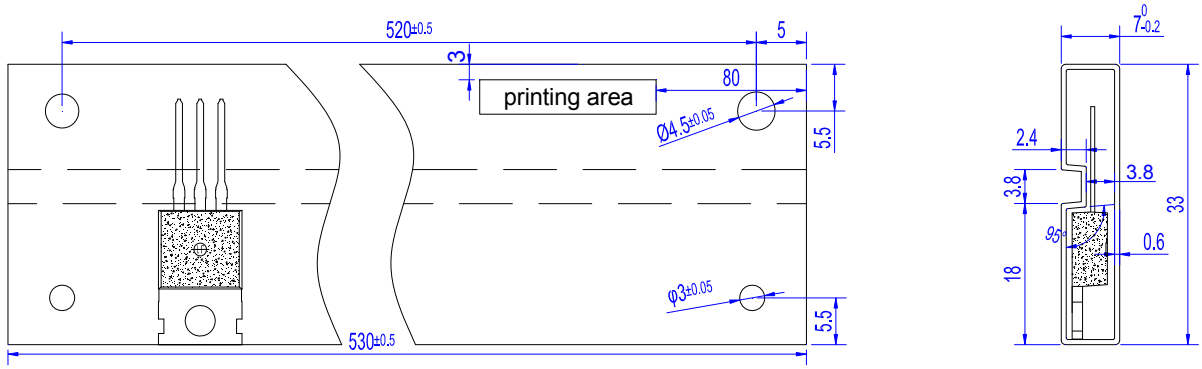
PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-220B	TUBE	50	1,000	5,000

PACKAGE MECHANICAL DATA



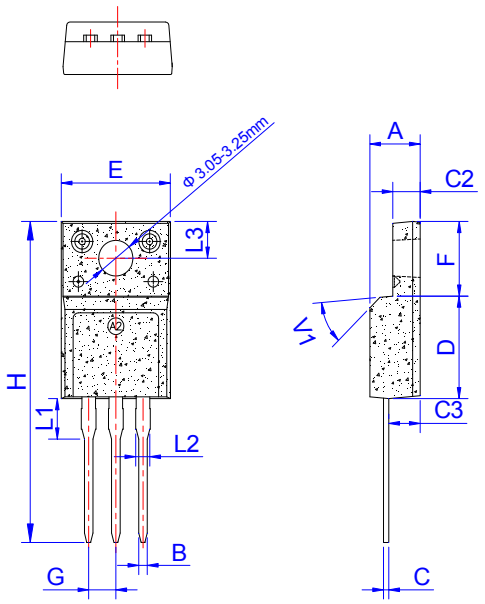
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.20		2.60	0.087		0.102
D	8.90		9.90	0.350		0.390
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.39			0.133	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116

DELIVERY MODE



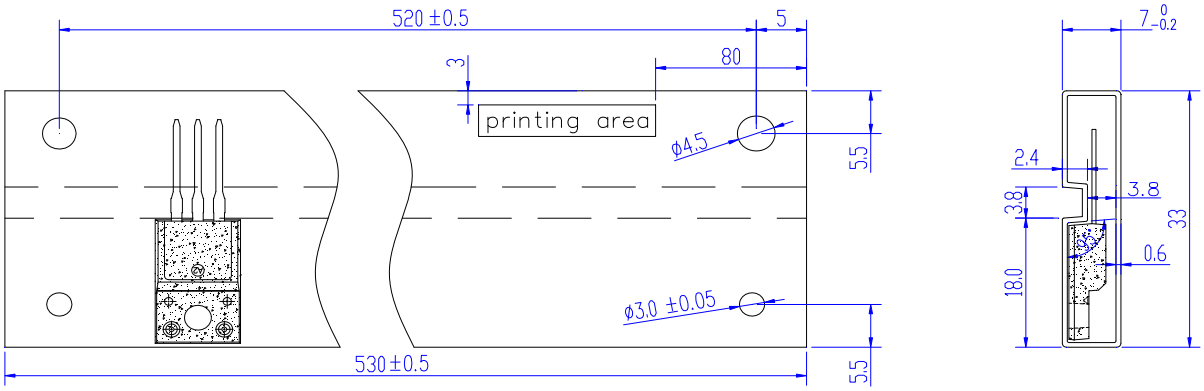
PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-220C	TUBE	50	1,000	5,000

PACKAGE MECHANICAL DATA



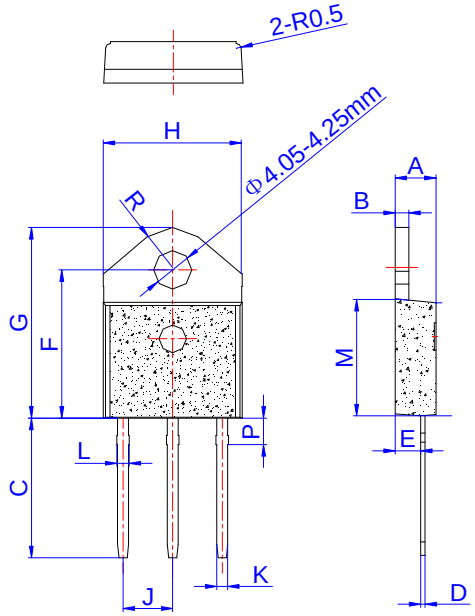
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.50		4.90	0.177		0.193
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.47		0.65	0.019		0.026
C2	2.45		2.75	0.096		0.108
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.80		10.4	0.386		0.410
F	6.40		6.80	0.252		0.268
G	2.40		2.70	0.094		0.106
H	28.0		29.8	1.102		1.173
L1		3.63			0.143	
L2	1.14		1.70	0.045		0.067
L3		3.30			0.130	
V1		45°			45°	

DELIVERY MODE



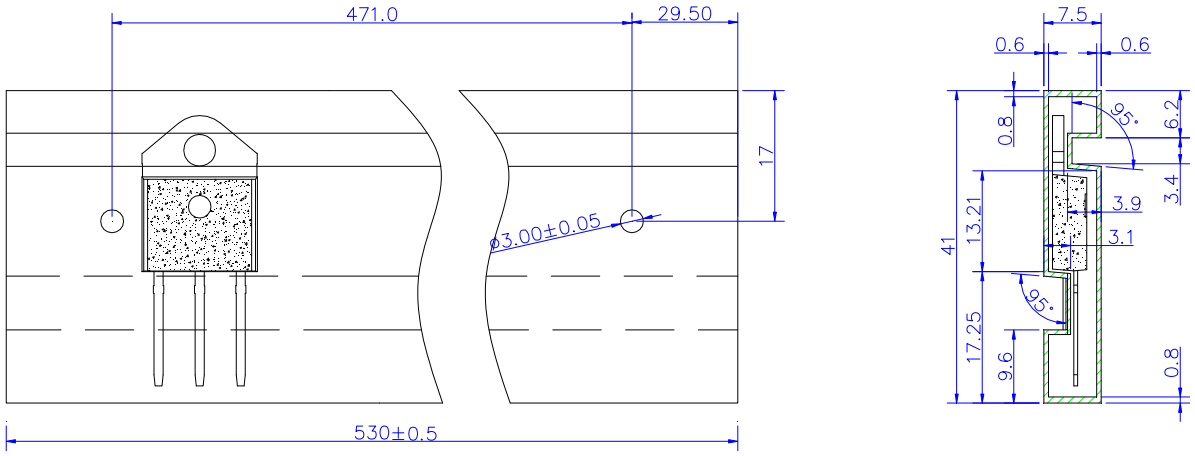
PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-220F	TUBE	50	1,000	5,000

PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	1.45		1.55	0.057		0.061
C	14.35		15.60	0.565		0.614
D	0.50		0.70	0.020		0.028
E	2.70		2.90	0.106		0.114
F	15.80		16.50	0.622		0.650
G	20.40		21.10	0.803		0.831
H	15.10		15.50	0.594		0.610
J	5.40		5.65	0.213		0.222
K	1.10		1.40	0.043		0.055
L	1.25		1.45	0.049		0.057
M	12.37		12.77	0.487		0.503
P	2.80		3.00	0.110		0.118
R		4.35			0.171	

DELIVERY MODE



PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-3P	TUBE	30	450	2,250

Information furnished in this document is believed to be accurate and reliable. However, Jiangsu JieJie Microelectronics Co.,Ltd assumes no responsibility for the consequences of use without consideration for such information nor use beyond it. Information mentioned in this document is subject to change without notice, apart from that when an agreement is signed, Jiangsu JieJie complies with the agreement. Products and information provided in this document have no infringement of patents. Jiangsu JieJie assumes no responsibility for any infringement of other rights of third parties which may result from the use of such products and information. This document supersedes and replaces all information previously supplied.

is a registered trademark of Jiangsu JieJie Microelectronics Co.,Ltd.