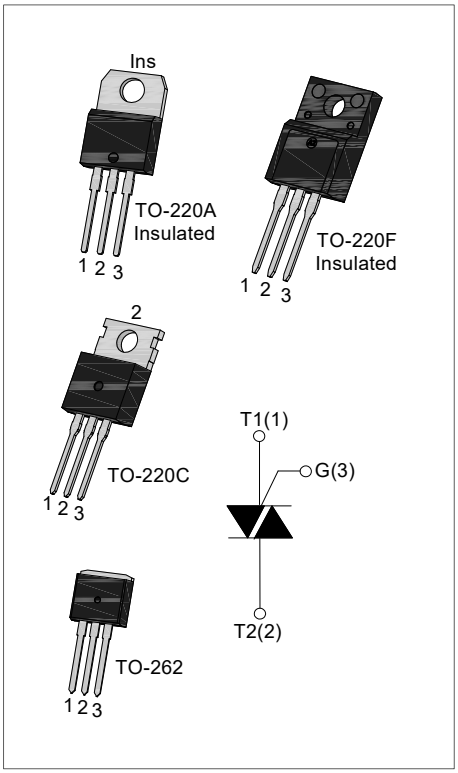
JST16 Series 16A TRIACs

Rev.10.0

DESCRIPTION:

With high ability to withstand the shock loading of large current, JST16 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, JST16A provides a rated insulation voltage of 2500 V_{RMS}, and JST16F provides a rated insulation voltage of 2000V_{RMS}, complying with UL standards (File ref: E252906). All the packages are RoHS compliant. (2011/65/EU)



MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	16	A
V_{DRM} /V_{RRM}	600/800/1200	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	V
Repetitive peak reverse voltage (T_j=25℃)		V_{RRM}	600/800/1200	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=90℃)	$I_{T(RMS)}$	16	A
	TO-220C (T_C=107℃)			
	TO-262 (T_C=80℃)			
Non repetitive surge peak on-state current (full cycle, F=50Hz)		I_{TSM}	160	A
I^2t value for fusing (tp=10ms)		I^2t	128	A^2s
Critical rate of rise of on-state current (I_G =2×I_{GT})		dI/dt	50	A/μs

Peak gate current tp=20uS	I_{GM}	4	A
Average gate power dissipation	$P_{G(AV)}$	1	W
Peak gate power tp=20uS	P_{GM}	5	W
Peak pulse voltage (Tj=25℃; non-repetitive,off-state;FIG.7)	Vpp	1.5	kV

ELECTRICAL CHARACTERISTICS (T_j=25℃ unless otherwise specified)

3 Quadrants

Symbol	Test Condition	Quadrant		Value				Unit
				BW	CW	SW	TW	
I_{GT}	V_D =12V R_L =33Ω	Ⅰ-Ⅱ-Ⅲ	MAX	50	35	10	5	mA
V_{GT}	V_D =12V R_L =33Ω	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	70	50	30	15	mA
		Ⅱ		80	60	40	20	
I_H	I_T =100mA		MAX	60	40	25	15	mA
dv/dt	V_D=2/3V_{DRM} Gate Open T_j =125℃		MIN	1500	1000	200	100	V/μs

4 Quadrants

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}	V_D =12V R_L =33Ω	ALL	MAX	1.5		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	70	50	mA
		Ⅱ		100	80	
I_H	I_T =100mA		MAX	60	40	mA
dV/dt	V_D=2/3V_{DRM} Gate Open T_j=125℃		MIN	1000	500	V/μs

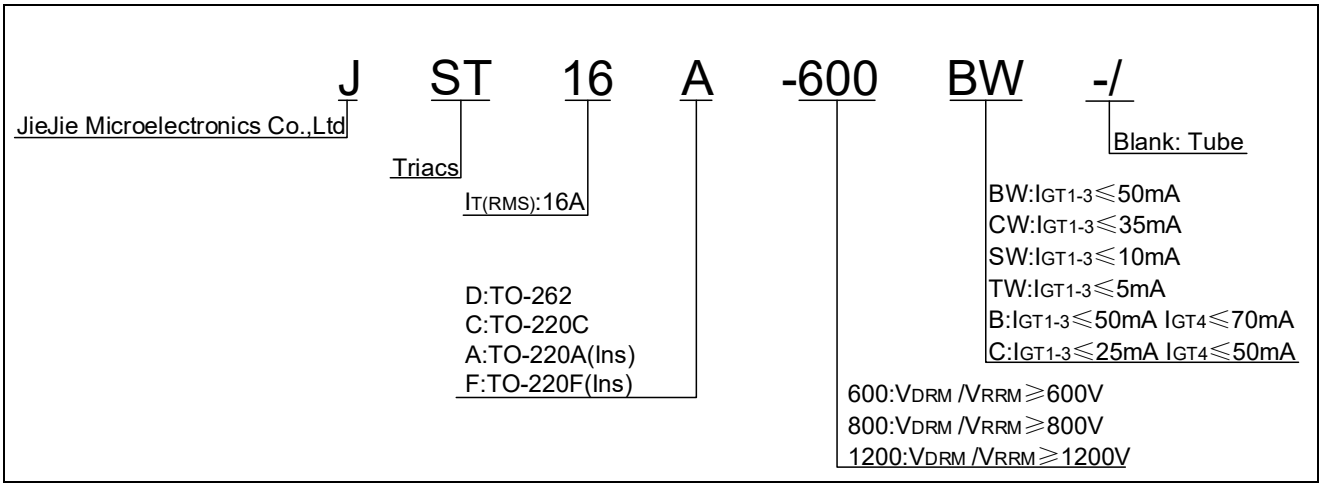
STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)			Unit
			-600V	-800V	-1200V	
V_{TM}	I_{TM} =22.5A tp=380μs	T_j=25℃	1.5			V
V_{TO}	Threshold voltage	T_j=125℃	0.94			V
Rd	Dynamic resistance	T_j=125℃	19.03			mΩ
I_{DRM}	V_D =V_{DRM} V_R =V_{RRM}	T_j=25℃	5	5	10	μA
I_{RRM}		T_j=125℃	1	1	2	mA

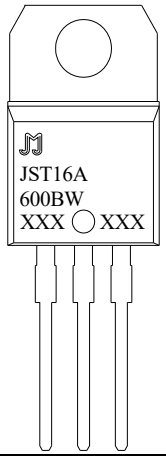
THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-220A(Ins)	1.68	℃/W
		TO-220C	0.86	
		TO-220F(Ins)	1.68	
		TO-262	2.16	

ORDERING INFORMATION



MARKING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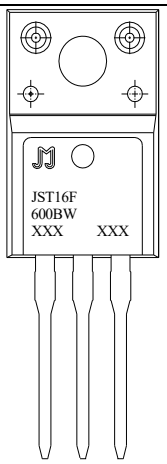
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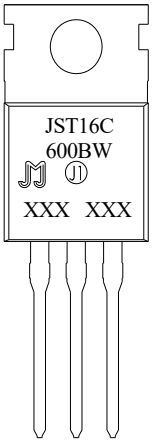
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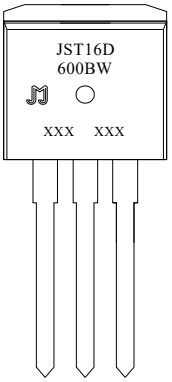
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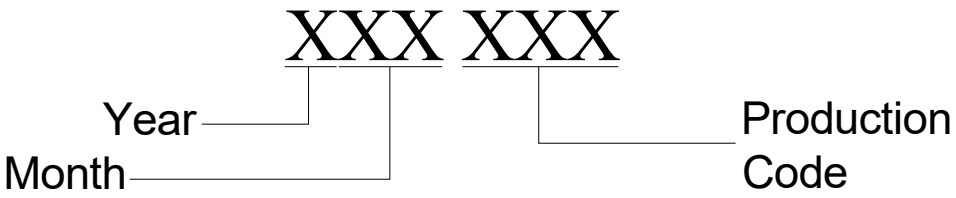

XXX XXX
Year
Month
Production
Code

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

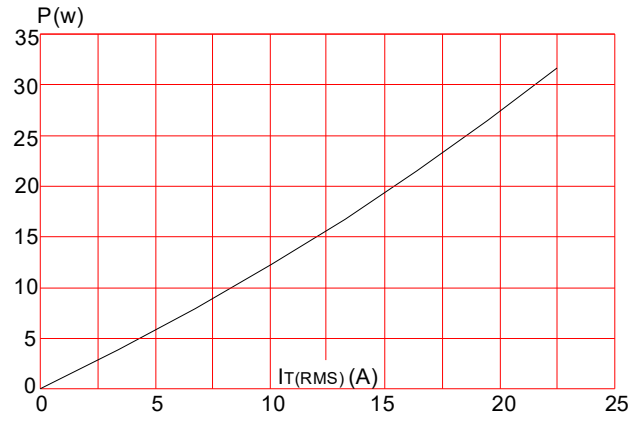


FIG.2: RMS on-state current versus case temperature

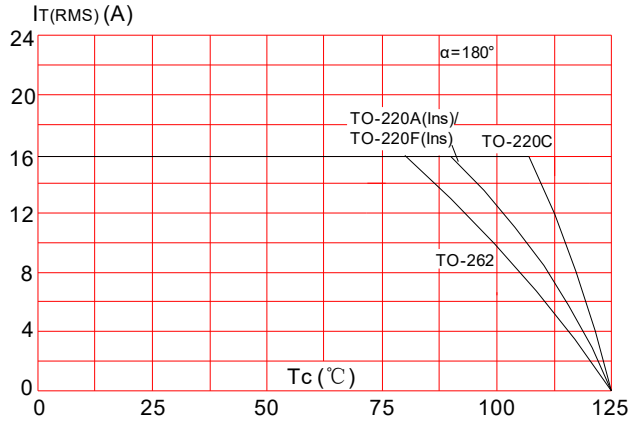


FIG.3: Surge peak on-state current versus number of cycles

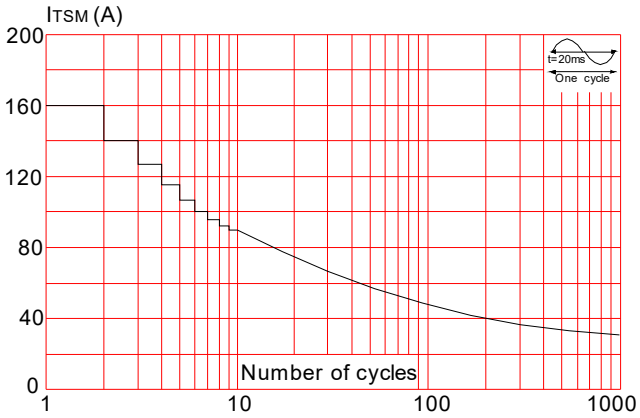


FIG.4: On-state characteristics (maximum values)

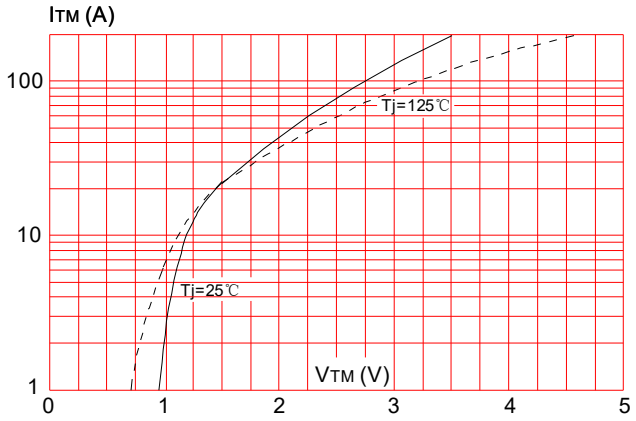


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<20ms, and corresponging value of I²t (dI/dt < 50A/μs)

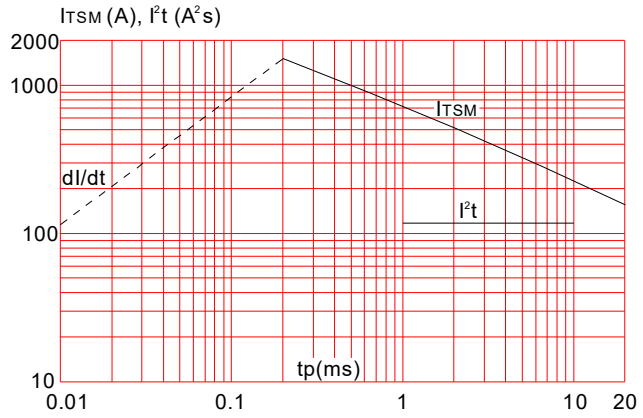


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

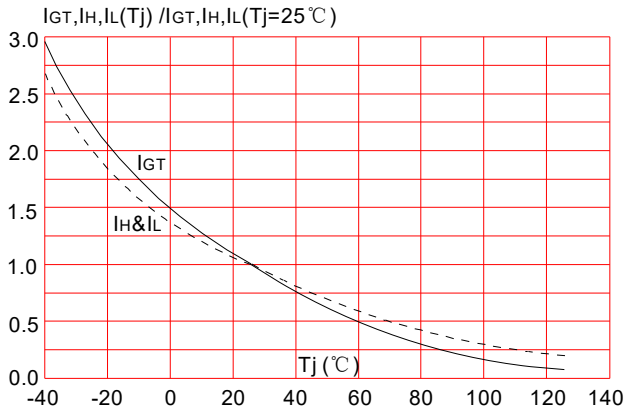
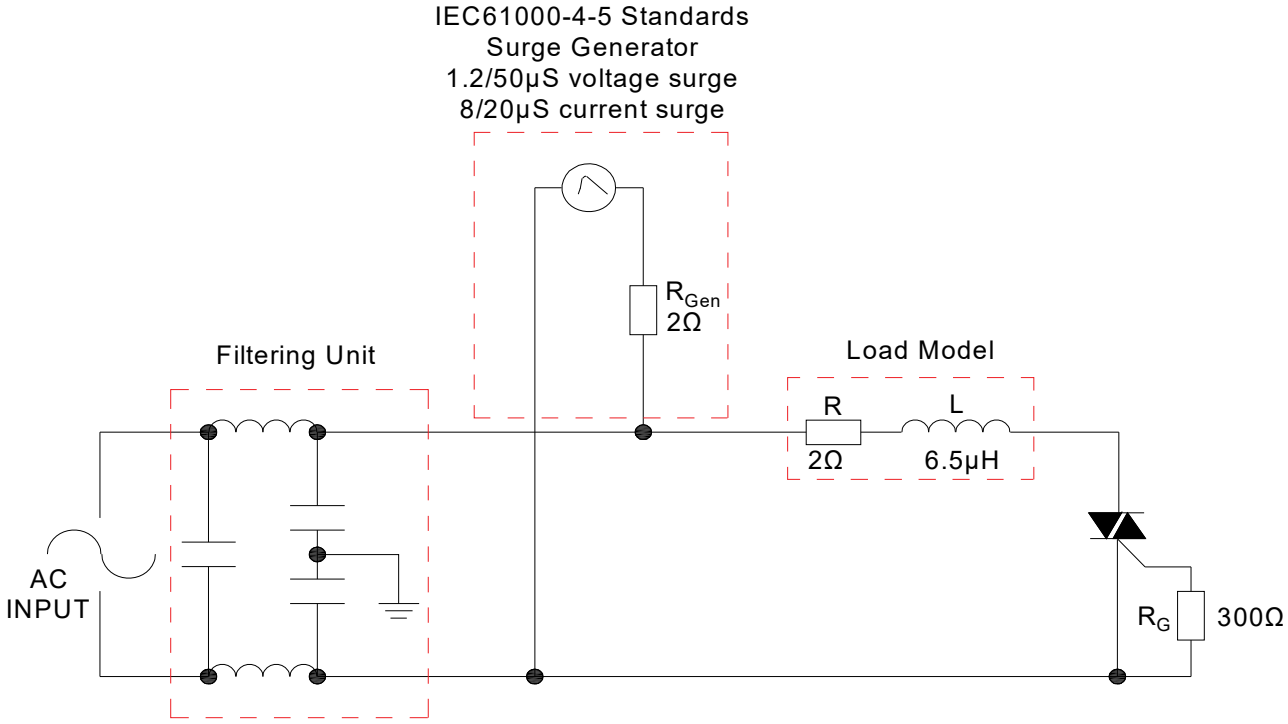


FIG.7：Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



ORDERING INFORMATION

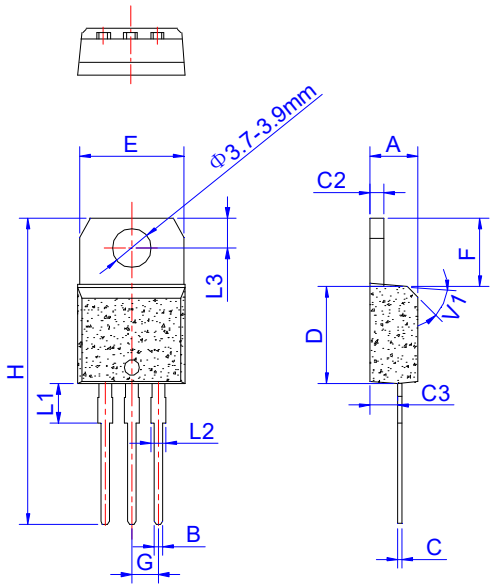
Order code	Voltage V_{DRM}/V_{RRM} (V)	IGT(mA)		Package	Base qty. (pcs)	Delivery mode
		Ⅰ-Ⅱ-Ⅲ	Ⅳ			
JST16A-600/800/1200B	600/800/1200	50	70	TO-220A(Ins)	50	Tube
JST16A-600/800/1200C		25	50			
JST16C-600/800/1200B		50	70	TO-220C		
JST16C-600/800/1200C		25	50			
JST16F-600/800/1200B		50	70	TO-220F(Ins)		
JST16F-600/800/1200C		25	50			
JST16D-600/800/1200B		50	70	TO-262		
JST16D-600/800/1200C		25	50			

Order code	Voltage V_{DRM}/V_{RRM} (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
JST16A-600/800/1200TW	600/800/1200	5	TO-220A(Ins)	50	Tube
JST16A-600/800/1200SW		10			
JST16A-600/800/1200CW		35			
JST16A-600/800/1200BW		50			
JST16C-600/800/1200TW		5	TO-220C		
JST16C-600/800/1200SW		10			
JST16C-600/800/1200CW		35			
JST16C-600/800/1200BW		50			
JST16F-600/800/1200TW	600/800/1200	5	TO-220F(Ins)		
JST16F-600/800/1200SW		10			
JST16F-600/800/1200CW		35			
JST16F-600/800/1200BW		50			
JST16D-600/800/1200TW		5	TO-262		
JST16D-600/800/1200SW		10			
JST16D-600/800/1200CW		35			
JST16D-600/800/1200BW		50			

Document Revision History

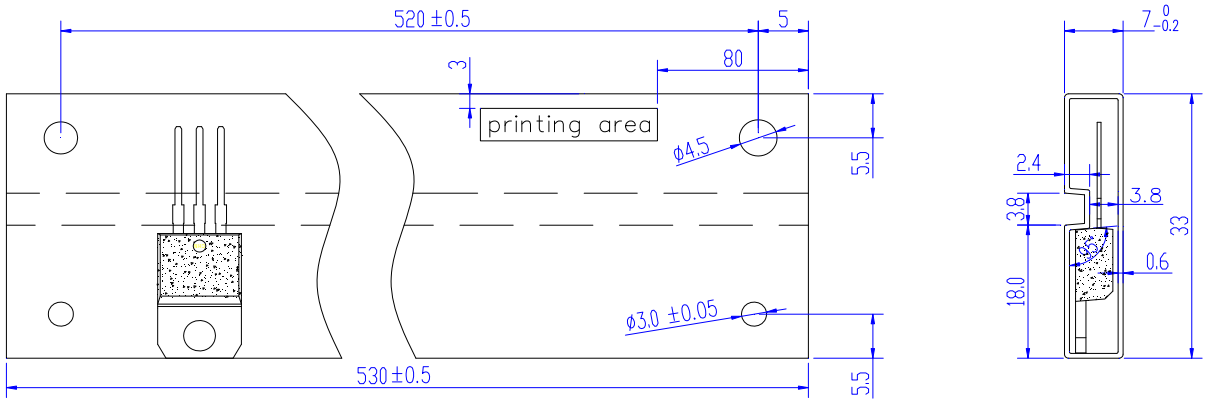
Date	Revision	Changes
July 9, 2021	7	Last update
July 26, 2021	8	Renew VTO & Rd
Mar 11 ,2022	9	Add Vpp
May 12, 2022	10	Delete TO-220B

PACKAGE MECHANICAL DATA



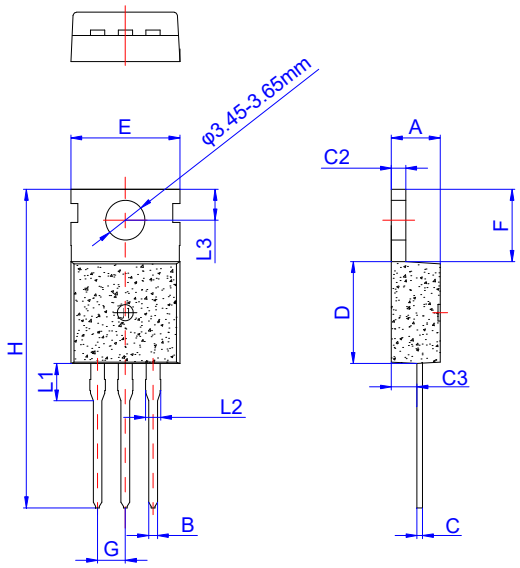
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.80		10.4	0.386		0.409
F	6.25		6.85	0.246		0.270
G	2.40		2.70	0.094		0.106
H	28.0		29.8	1.102		1.173
L1	3.45		4.05	0.136		0.159
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	

DELIVERY MODE



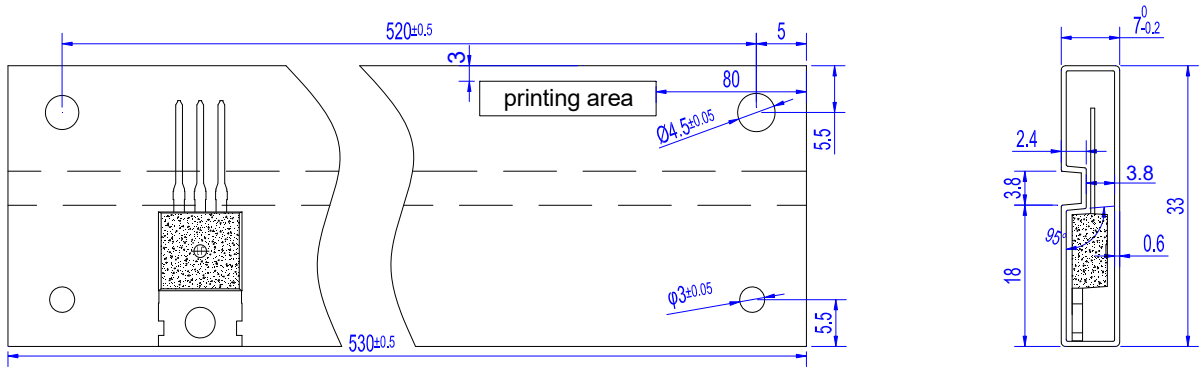
PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-220A	TUBE	50	1,000	5,000

PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.25		1.35	0.049		0.053
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	2.40		2.70	0.094		0.106
H	28.0		29.8	1.102		1.173
L1	2.70		3.30	0.106		0.130
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116

DELIVERY MODE



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TO-220C	TUBE	50	1,000	5,000

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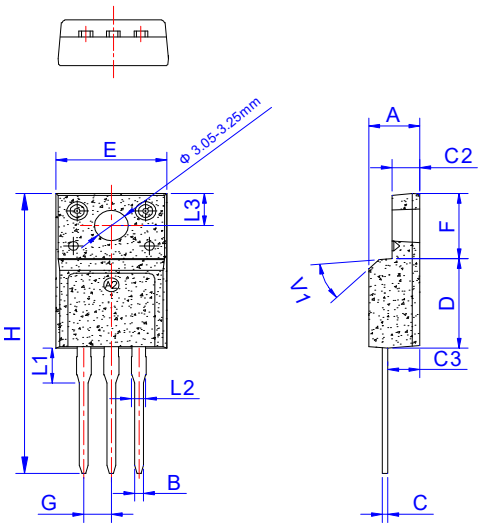
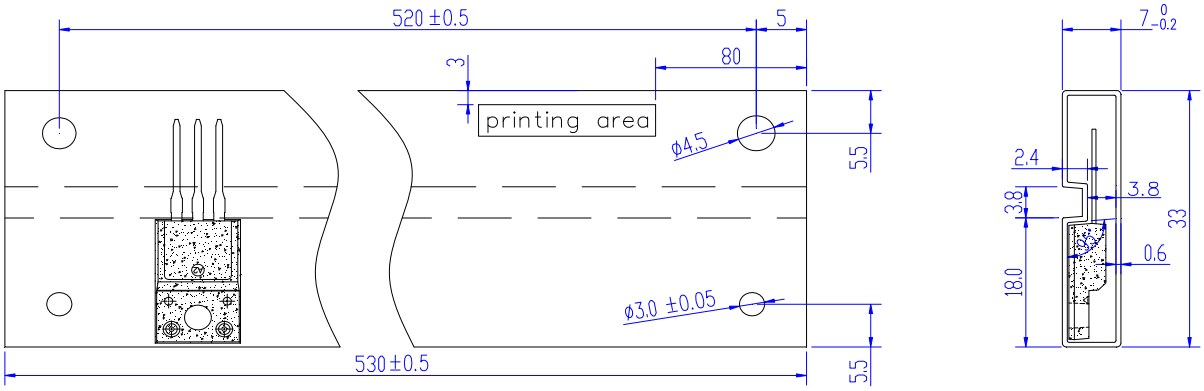


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.50		4.90	0.177		0.193
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.47		0.65	0.019		0.026
C2	2.45		2.75	0.096		0.108
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.80		10.4	0.386		0.410
F	6.40		6.80	0.252		0.268
G	2.40		2.70	0.094		0.106
H	28.0		29.8	1.102		1.173
L1	3.20		3.80	0.126		0.150
L2	1.14		1.70	0.045		0.067
L3	3.20		3.60	0.126		0.142
V1		45°			45°	

DELIVERY MODE



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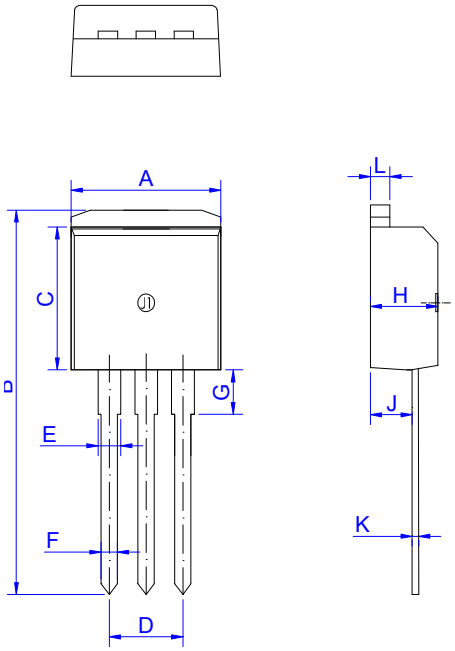
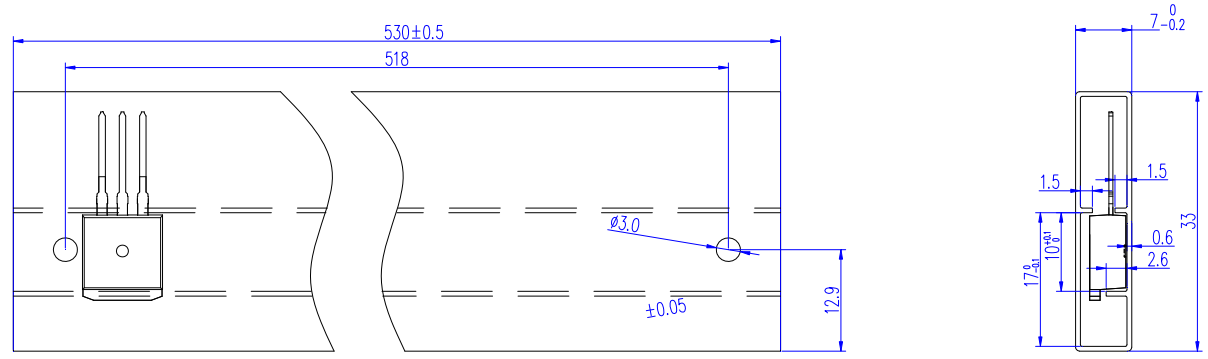


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.95		10.20	0.392		0.402
B	23.85		24.05	0.939		0.947
C	9.40		9.60	0.370		0.378
D	4.95		5.25	0.195		0.207
E	1.35		1.40	0.053		0.055
F	0.80		0.85	0.031		0.033
G	2.70		3.40	0.106		0.134
H	4.45		4.55	0.175		0.179
J	2.20		2.60	0.087		0.102
K	0.48		0.52	0.019		0.020
L	1.30		1.35	0.051		0.053

DELIVERY MODE



PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-262	TUBE	50	1,000	5,000

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