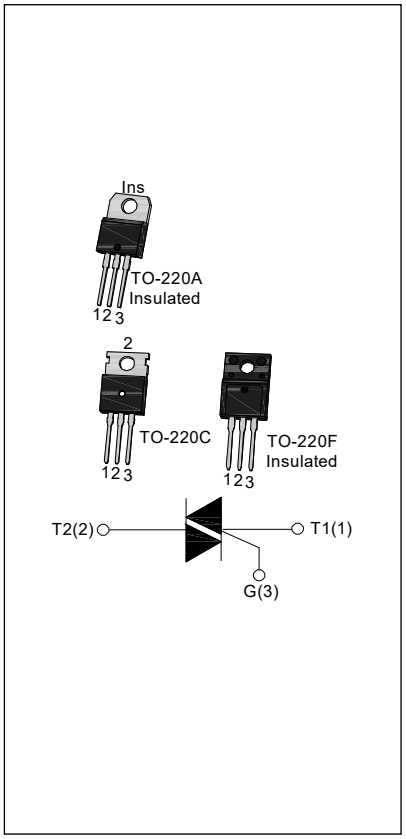
T12xxH Series 12A TRIACs

Rev.8.0

DESCRIPTION:

T12xxH series triacs of high junction temperature with high dv/dt rate with strong resistance to electromagnetic interference provide high ability to withstand the shock loading of large current. They are especially recommended for use on inductive load and high environment temperature condition.
From all three terminals to external heatsink, T12xxH-xxA provides a rated insulation voltage of 2500 V_{RMS}, and T12xxH-xxF provides a rated insulation voltage of 2000 V_{RMS}, complying with UL standards (File ref: E252906). All the packages listed above are RoHS compliant. (2011/65/EU)



MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	12	A
V_{DRM} /V_{RRM}	600/800	V
T_{jmax}	150	℃

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Storage junction temperature range		T_{stg}	-40-150	℃
Operating junction temperature range		T_j	-40-150	℃
Repetitive peak off-state voltage(T_j=25℃)		V_{DRM}	600/800	V
Repetitive peak reverse voltage(T_j=25℃)		V_{RRM}	600/800	V
RMS on-state current	TO-220A(Ins)/ TO-220F(Ins) (T_C=110℃)	$I_{T(RMS)}$	12	A
	TO-220C (T_C=120℃)			
Non repetitive surge peak on-state current (full cycle, F=50Hz)		I_{TSM}	120	A
I^2t value for fusing (tp=10ms)		I^2t	72	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}	5	W

ELECTRICAL CHARACTERISTICS (T_j=25℃ unless otherwise specified)

Symbol	Test Condition	Quadrant		Value				Unit
				T1210H	T1220H	T1235H	T1250H	
I_{GT}	V_D=12V R_L=33Ω	Ⅰ-Ⅱ-Ⅲ	MAX	10	20	35	50	mA
V_{GT}		Ⅰ-Ⅱ-Ⅲ	MAX	1.3				V
V_{GD}	V_D=V_{DRM} T_j=150℃ R_L=3.3KΩ	Ⅰ-Ⅱ-Ⅲ	MIN	0.2				V
I_L	I_G=1.2I_{GT}	Ⅰ-Ⅲ	MAX	20	40	50	70	mA
		Ⅱ		35	55	70	100	
I_H	I_T=100mA		MAX	20	30	45	60	mA
dV/dt	V_D=2/3V_{DRM} R_{GK}=1KΩ T_j=150℃		MIN	200	500	1000	1500	V/μs

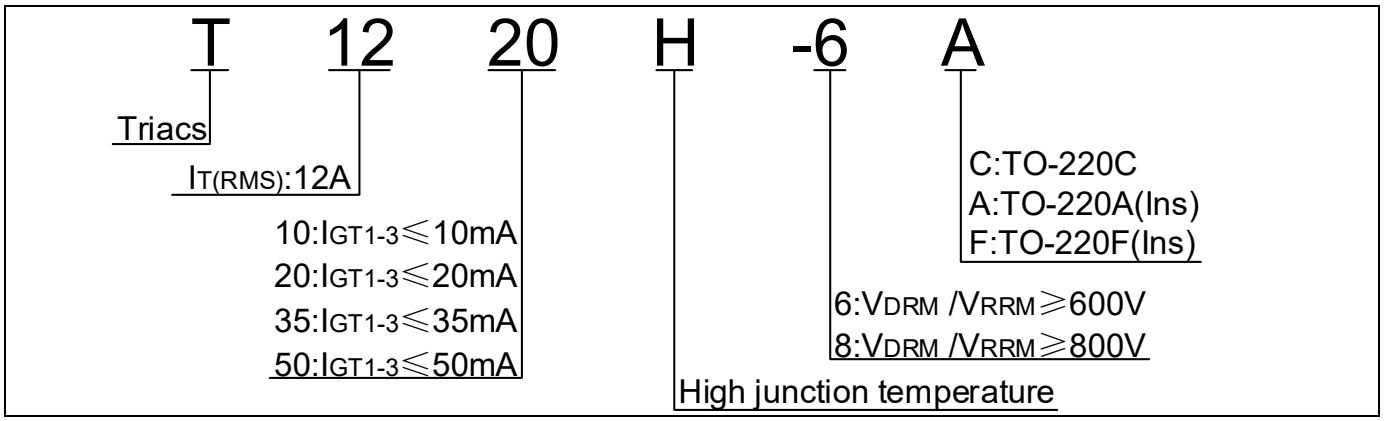
STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX)	Unit
V_{TM}	I_{TM}=17A tp=380μs	T_j=25℃	1.4	V
V_{TO}	Threshold voltage	T_j=125℃	0.9	V
Rd	Dynamic resistance	T_j=125℃	32	mΩ
I_{DRM}	V_D=V_{DRM} V_R=V_{RRM}	T_j=25℃	5	μA
I_{RRM}		T_j=150℃	2	mA

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	junction to case(AC)	TO-220A(Ins)/ TO-220F(Ins)	2.5	℃/W
		TO-220C	1.9	

ORDERING INFORMATION



MARKING

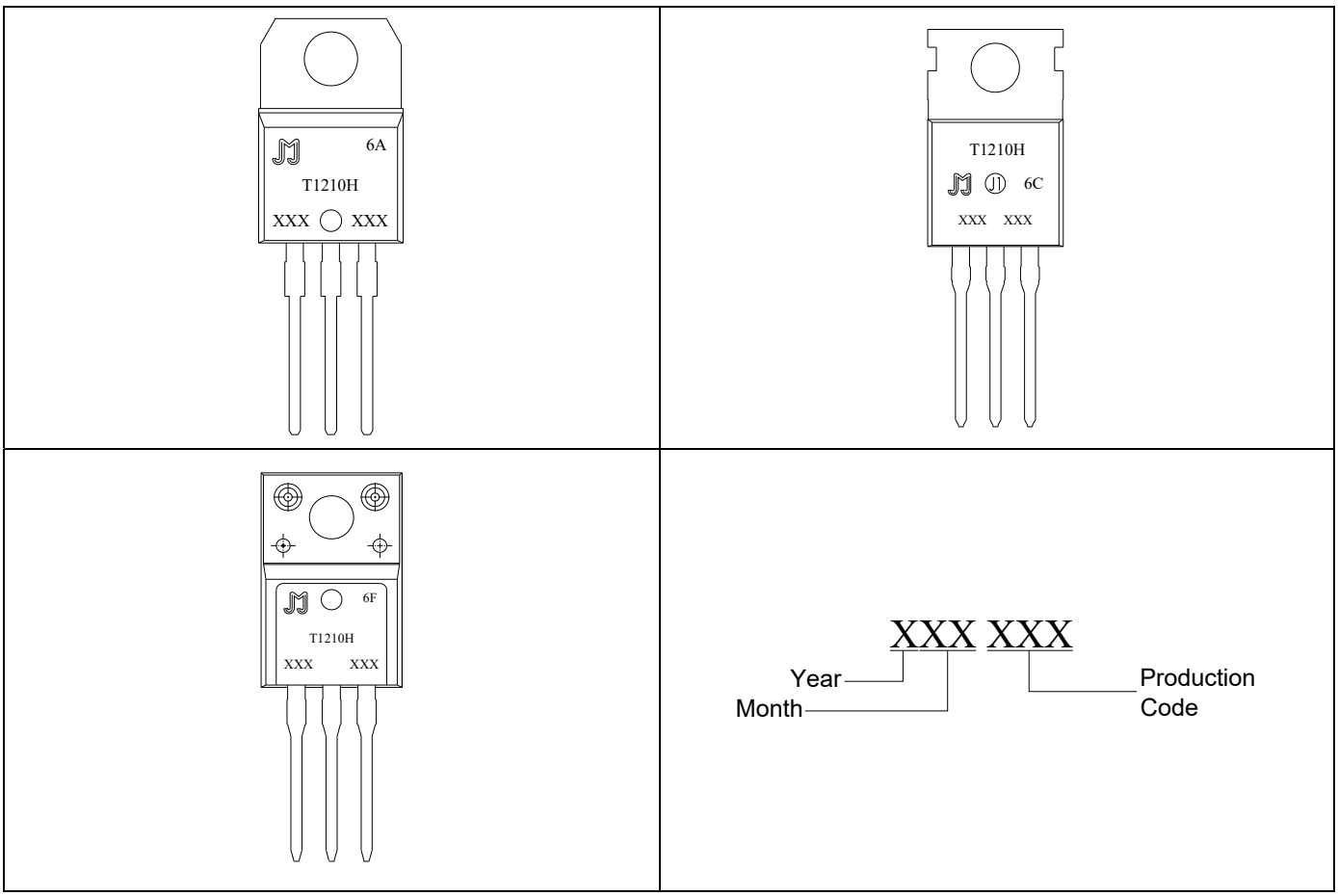


FIG.1: Maximum power dissipation versus RMS on-state current

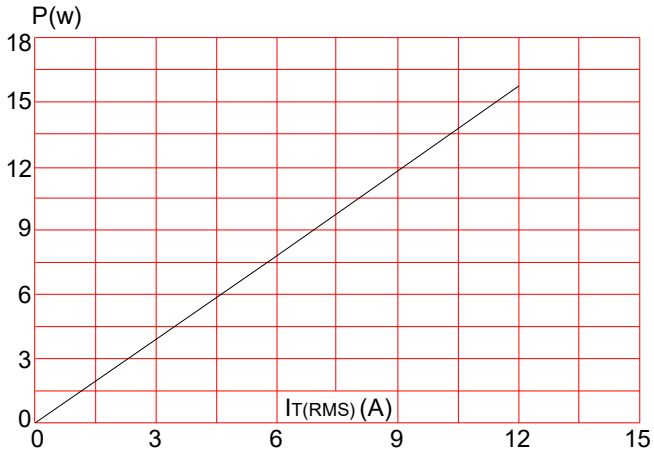


FIG.2: RMS on-state current versus case temperature

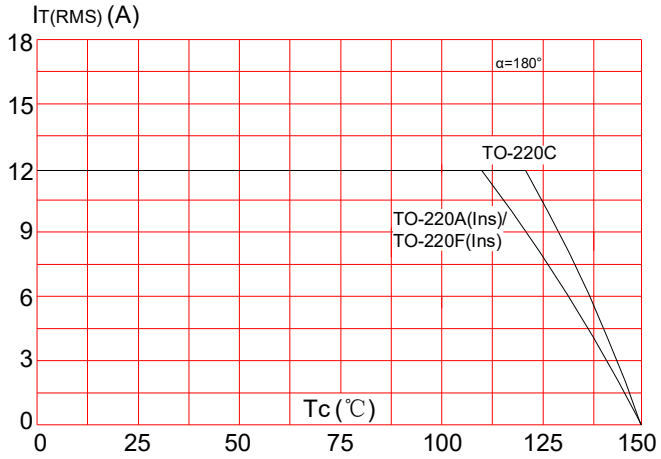


FIG.3: Surge peak on-state current versus number of cycles

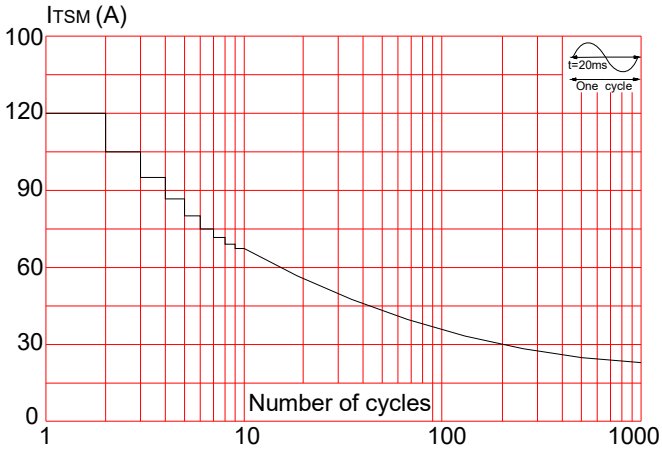


FIG.4: On-state characteristics (maximum values)

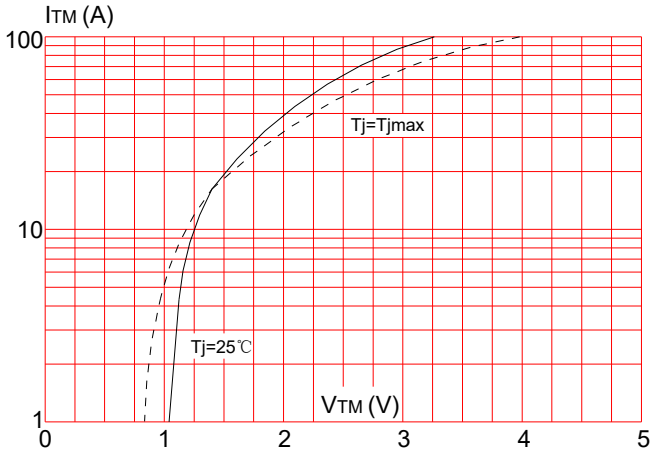


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<20ms, and corresponging value of I^2t (dI/dt < 50A/μs)

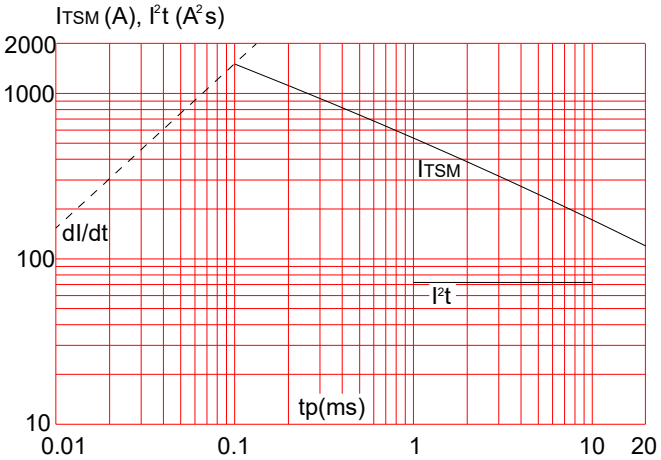
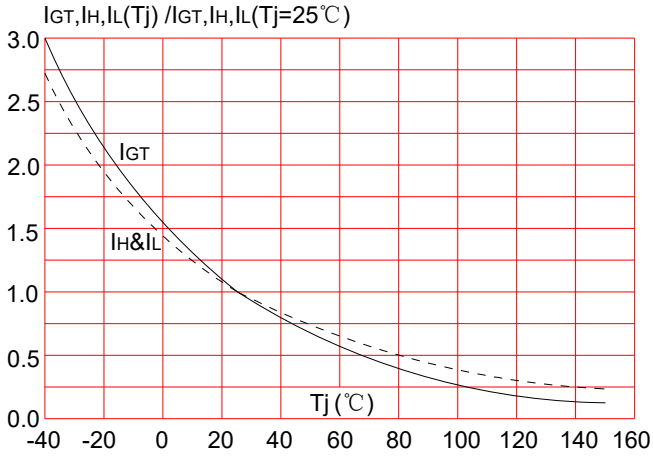


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



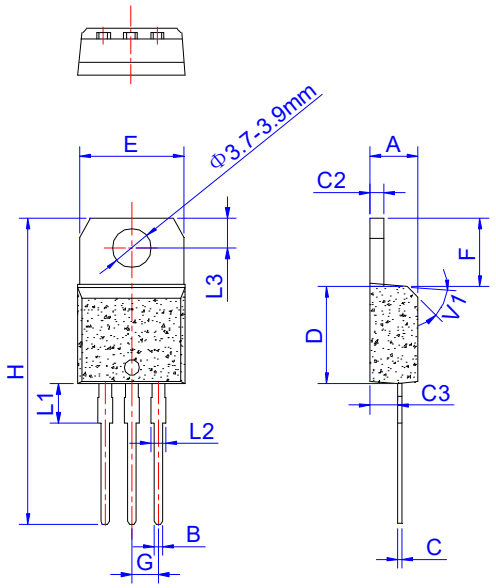
ORDERING INFORMATION

Order code	Voltage V_{DRM}/V_{RRM} (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
T1210H-6/8A	600/800	10	TO-220A(Ins)	50	Tube
T1220H-6/8A		20			
T1235H-6/8A		35			
T1250H-6/8A		50			
T1210H-6/8C		10	TO-220C		
T1220H-6/8C		20			
T1235H-6/8C		35			
T1250H-6/8C		50			
T1210H-6/8F		10	TO-220F(Ins)		
T1220H-6/8F		20			
T1235H-6/8F		35			
T1250H-6/8F		50			

Document Revision History

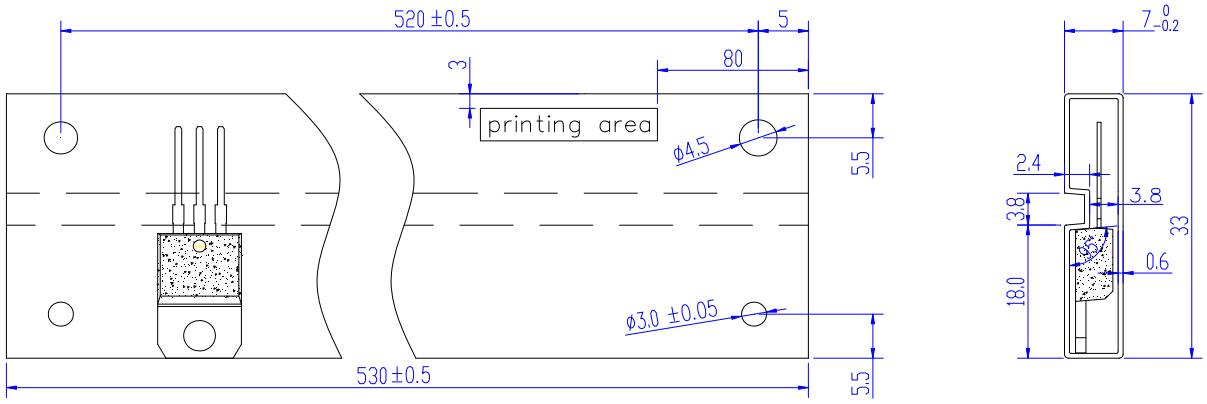
Date	Revision	Changes
Apr 28, 2019	7	Last update
Jul 05, 2022	8	Delete TO-220B package, Add Vto & Rd

PACKAGE MECHANICAL DATA



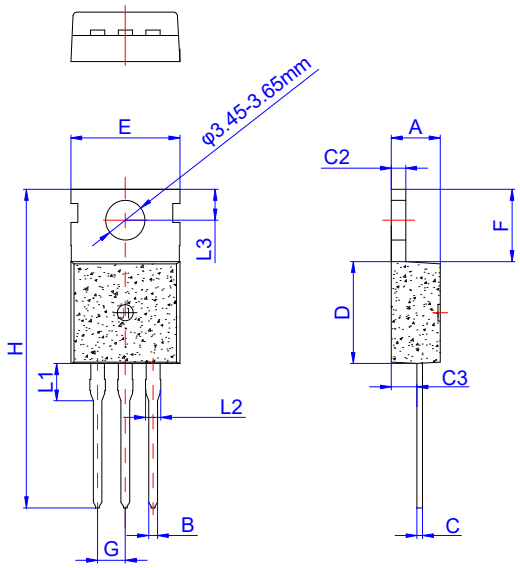
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.80		10.4	0.386		0.409
F	6.25		6.85	0.246		0.270
G	2.40		2.70	0.094		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



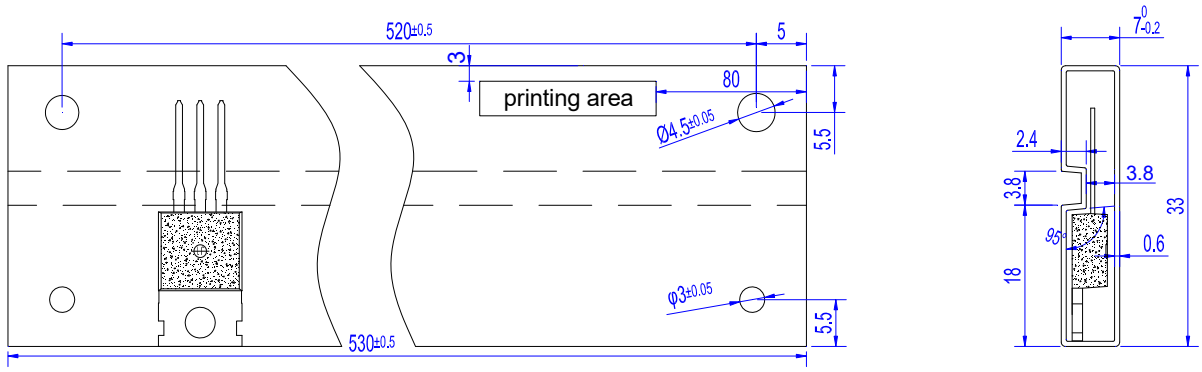
PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-220A	TUBE	50	1,000	5,000

PACKAGE MECHANICAL DATA



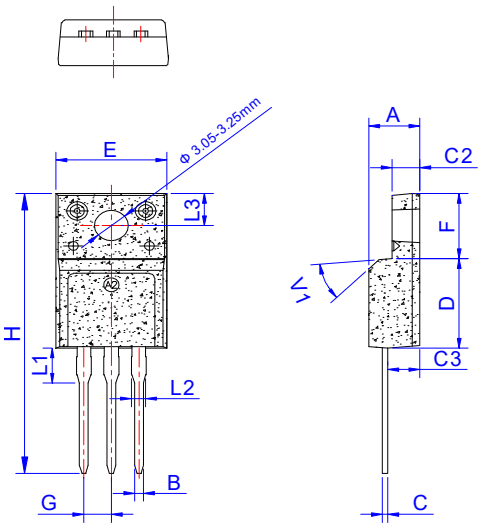
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.25		1.35	0.049		0.053
C3	2.20		2.60	0.087		0.102
D	8.90		9.90	0.350		0.390
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G	2.40		2.70	0.094		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



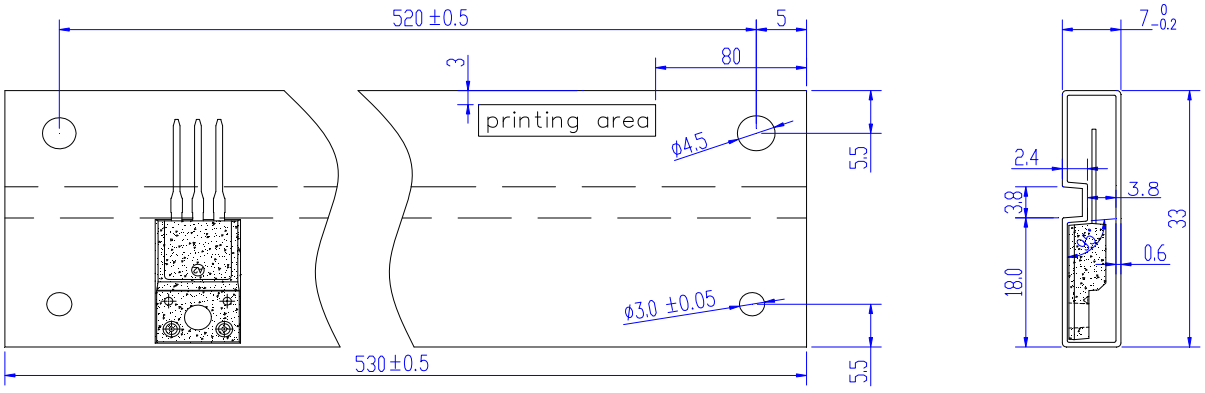
PACKAGE	OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON
TO-220C	TUBE	50	1,000	5,000

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	3.20		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



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

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