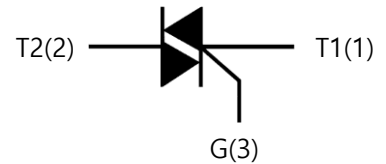
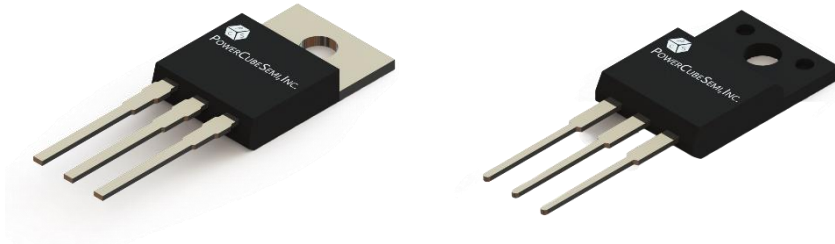


# JST16 Series

600/800/1200V-Level 16A TRIACs

## 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 interference. 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 2,500 VRMS, and JST16F provides a rated insulation voltage of 2,000 VRMS, complying with UL standards.



PKG type : TO-220A, TO-220C, TO-220F, TO-262



## Absolute Maximum Ratings

Symbol	Parameter	Value	Unit	
$V_{DRM}$	Repetitive Peak Off-State Voltage ( $T_J=25^{\circ}C$ )	600/800/1200	V	
$V_{RRM}$	Repetitive Peak Reverse Voltage ( $T_J=25^{\circ}C$ )	600/800/1200	A	
$I_{T(RMS)}$	RMS On-State Current	TO-220A / TO-220F ( $T_C=90^{\circ}C$ )	16	A
		TO-220C ( $T_C=107^{\circ}C$ )		
		TO-262 ( $T_C=80^{\circ}C$ )		
$I_{TSM}$	Non-Repetitive Surge Peak On-State Current (full cycle, $f=50Hz$ )	160	A	
$I^2t$	$I^2t$ Value for Fusing ( $t_p=10ms$ )	128	$A^2s$	
di/dt	Critical Rate of Rise of On-State Current ( $I_G=2 \times I_{GT}$ )	50	$A/\mu s$	
$T_J$	Operating Junction Temperature Range	-40 to 125	$^{\circ}C$	
$T_{stg}$	Storage Junction Temperature Range	-40 to 150	$^{\circ}C$	
$I_{GM}$	Peak Gate Current	4	A	
$P_{G(AV)}$	Average Gate Power Dissipation	1	W	
$P_{GM}$	Peak Gate Power	5	W	
$V_{PP}$	Peak Pulse Voltage ( $T_J=25^{\circ}C$ ; Non-Repetitive, Off-State ; Fig. 7)	1.5	kV	

## Electrical Characteristics $T_J=25^\circ\text{C}$ unless otherwise specified

### 3 Quadrants

Symbol	Test Condition	Quadrant		Numerical				Unit
				BW	CW	SW	TW	
$I_{GT}$	$V_D=12\text{V}, R_L=33\Omega$	I · II · III	MAX	50	35	10	5	mA
$V_{GT}$		I · II · III	MAX	1.3				V
$V_{GD}$	$V_D=V_{DRM}, T_J=125^\circ\text{C}, R_L=3.3\text{k}\Omega$	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	
$I_H$	$I_T=100\text{mA}$		MAX	60	40	25	15	mA
dV/dt	$V_D=2/3V_{DRM}$ Gate Open $T_J=125^\circ\text{C}$		MIN	1500	1000	200	100	V/ $\mu\text{s}$

### 4 Quadrants

Symbol	Test Condition	Quadrant		Numerical		Unit
				B	C	
$I_{GT}$	$V_D=12\text{V}, R_L=33\Omega$	I · II · III	MAX	50	25	mA
		IV		70	50	
$V_{GT}$		ALL	MAX	1.5		V
$V_{GD}$	$V_D=V_{DRM}, T_J=125^\circ\text{C}, R_L=3.3\text{k}\Omega$	ALL	MIN	0.2		V
$I_L$	$I_G=1.2I_{GT}$	I · III · IV	MAX	70	50	mA
		II		100	80	
$I_H$	$I_T=100\text{mA}$		MAX	60	40	mA
dV/dt	$V_D=2/3V_{DRM}$ Gate Open $T_J=125^\circ\text{C}$		MIN	1000	500	V/ $\mu\text{s}$

## Static Characteristics

Symbol	Parameter		Value (MAX)			Unit
			-600V	-800V	-1200V	
$V_{TM}$	$I_{TM}=5.5\text{A}, t_p=380\mu\text{s}$	$T_J=25^\circ\text{C}$	1.5			V
$V_{TO}$	Threshold Voltage	$T_J=125^\circ\text{C}$	0.94			V
$R_d$	Dynamic Resistance	$T_J=125^\circ\text{C}$	19			m $\Omega$
$I_{DRM}$	$V_D=V_{DRM}, V_R=V_{RRM}$	$T_J=25^\circ\text{C}$	5	5	10	$\mu\text{A}$
$I_{RRM}$		$T_J=125^\circ\text{C}$	1	1	2	mA



## Thermal Resistances

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case	TO-220A	1.68
		TO-220C	0.86
		TO-220F	1.68
		TO-262	2.16

## Package Marking and Ordering Information

Device Marking	$V_{DRM} / V_{RRM}$ [V]	IGT(Ma)		Package	Packing Method	Quantity
		I · II · III	IV			
JST16A-600/800/1200B	600/800/1200	50	70	TO-220A	Tube	50
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		
JST16F-600/800/1200C		25	50			
JST16D-600/800/1200B		50	70	TO-262		
JST16D-600/800/1200C		25	50			



## Package Marking and Ordering Information

Device Marking	V <sub>DRM</sub> / V <sub>RRM</sub> [V]	IGT(Ma)	Package	Packing Method	Quantity
JST16A-600/800/1200TW	600/800/1200	5	TO-220A	Tube	50
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		
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			

# Typical Characteristics

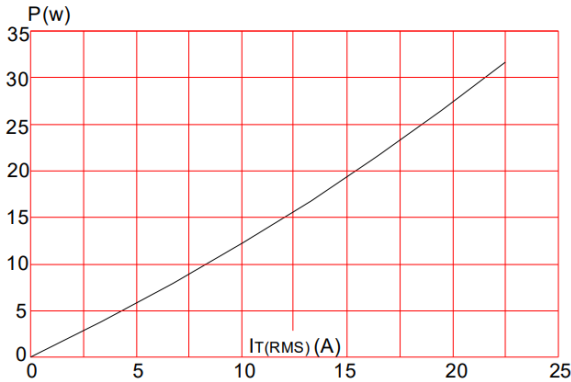


Figure 1. Maximum Power Dissipation vs. RMS On-State Current

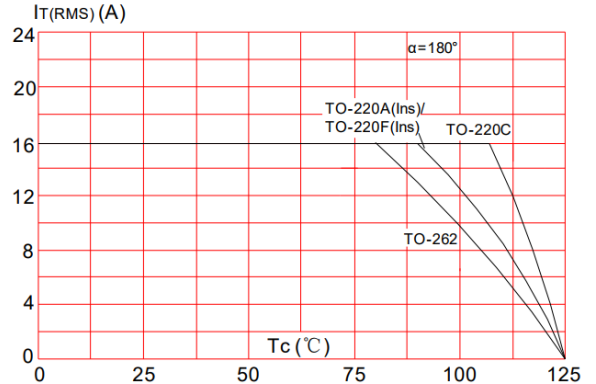


Figure 2. RMS On-State Current vs. Case Temperature

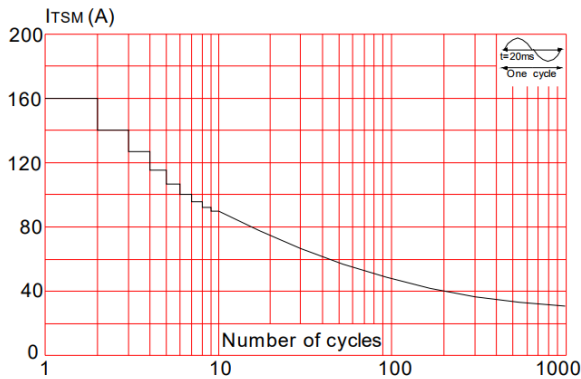


Figure 3. Surge Peak On-State Current vs. Number of Cycles

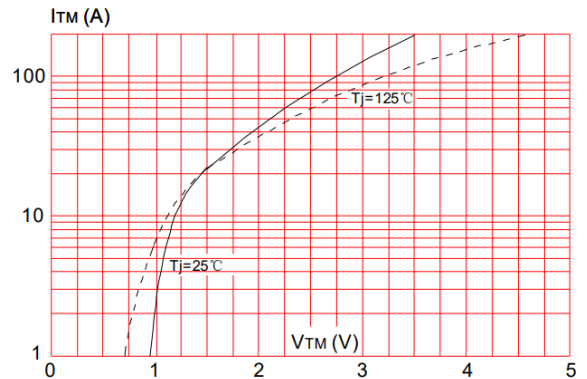


Figure 4. On-State Characteristics (Maximum Values)

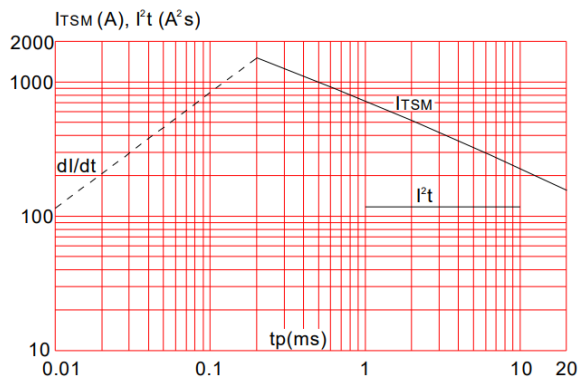


Figure 5. Non-Repetitive Surge Peak On-State Current for a Sinusoidal Pulse with width  $t_p < 20ms$  and Corresponding Value of  $I^2T$  ( $di/dt < 50A/\mu s$ )

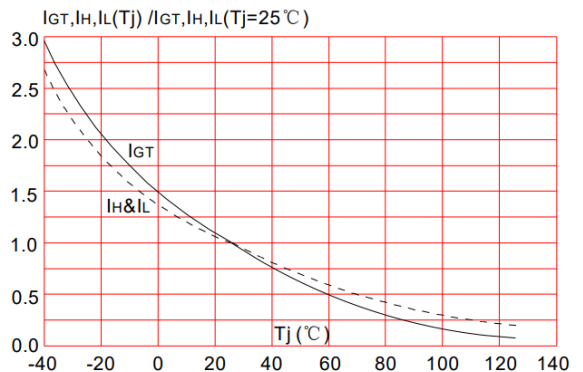
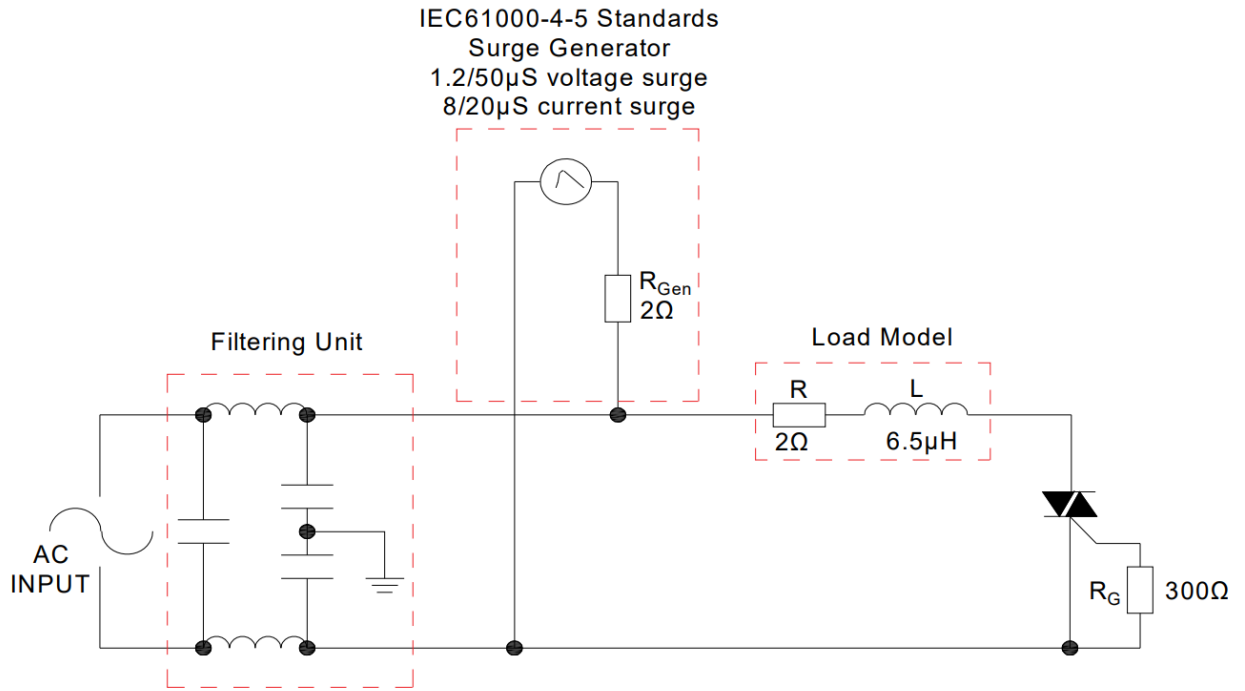


Figure 6. Relative Variations of Gate Trigger Current, Holding Current and Latching Current vs. Junction Temperature

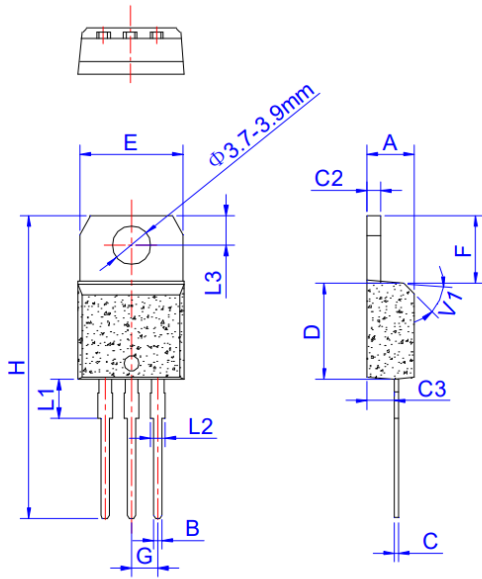
**Fig. 7 : Test Circuit for Inductive and Resistive Loads to IEC-61000-4-5 Standards**



### Package Outline

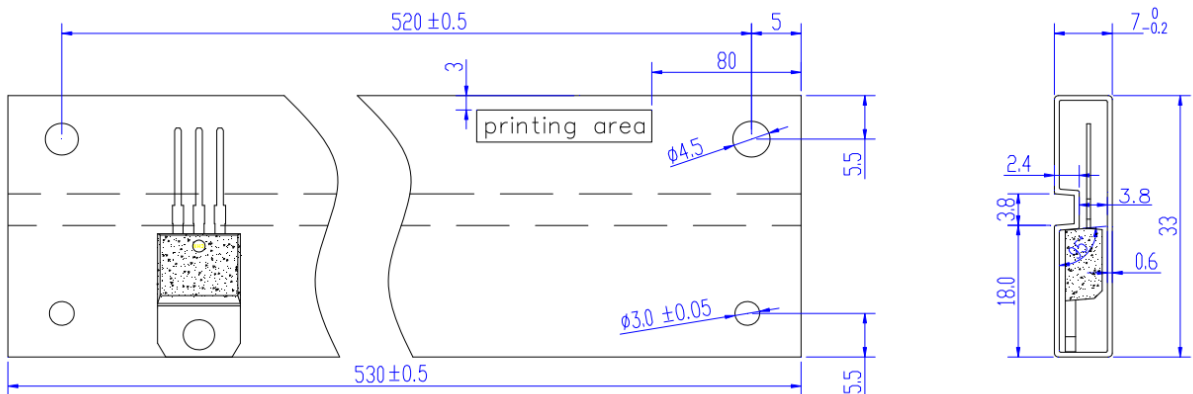
[ TO-220A ]

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

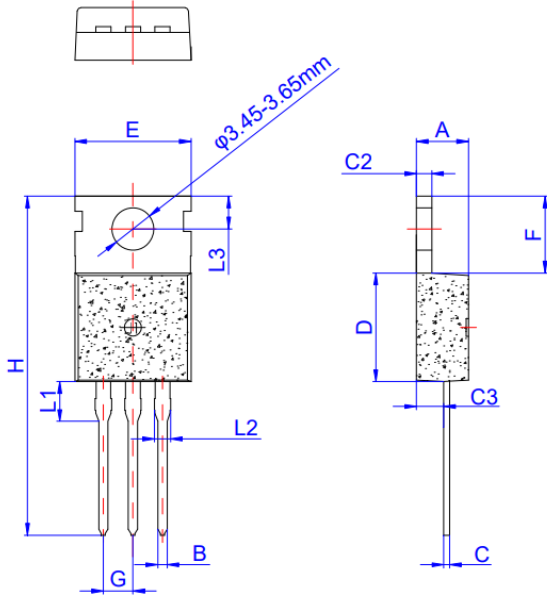


Package	Outline	Tube	Inner Box	Per Carton
TO-220A	TUBE	50	1,000	5,000

### Package Outline

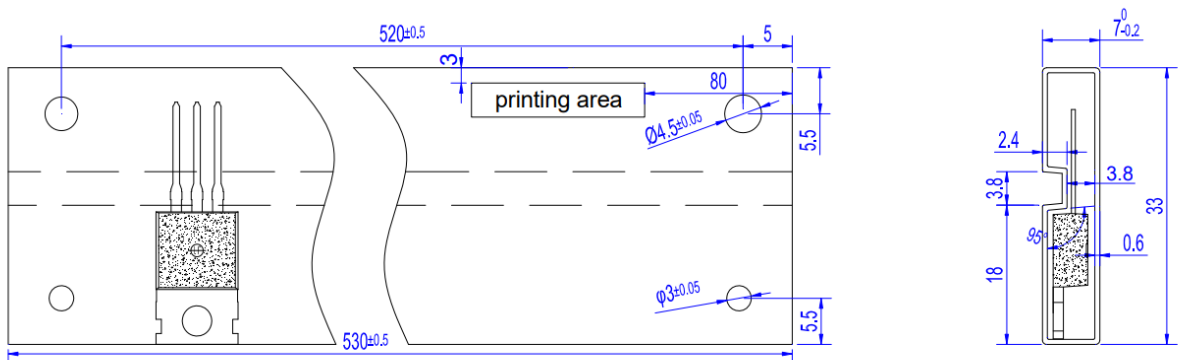
[ TO-220C ]

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



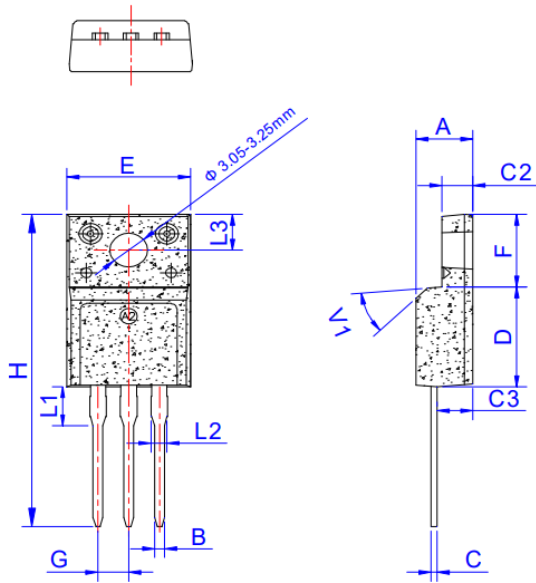
Package	Outline	Tube	Inner Box	Per Carton
TO-220C	TUBE	50	1,000	5,000



## Package Outline

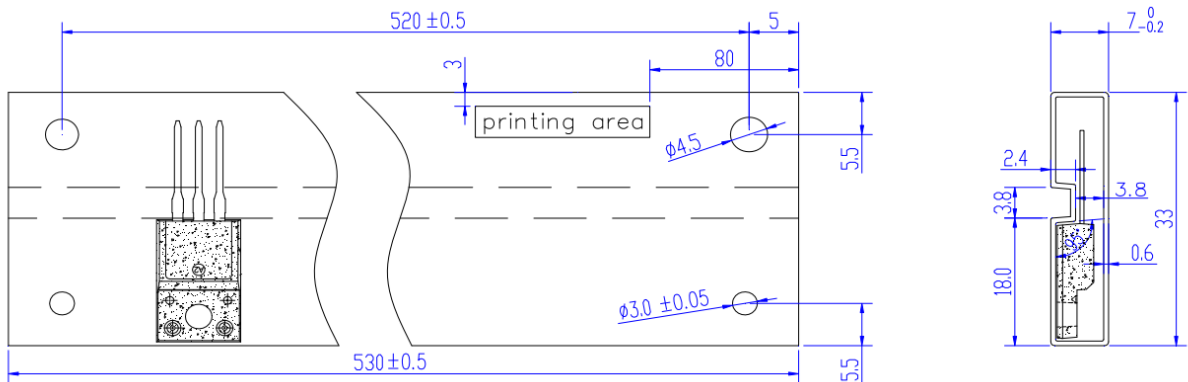
[ TO-220F ]

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

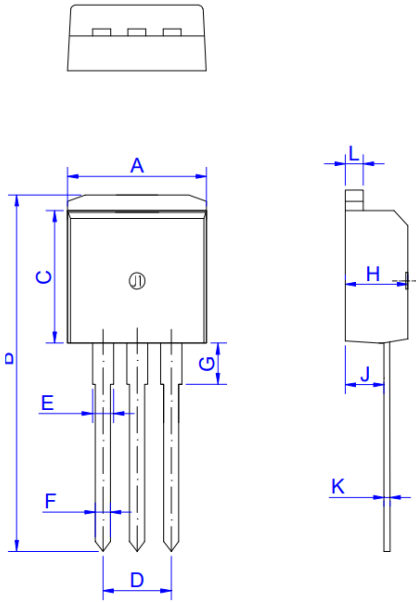


Package	Outline	Tube	Inner Box	Per Carton
TO-220F	TUBE	50	1,000	5,000

## Package Outline

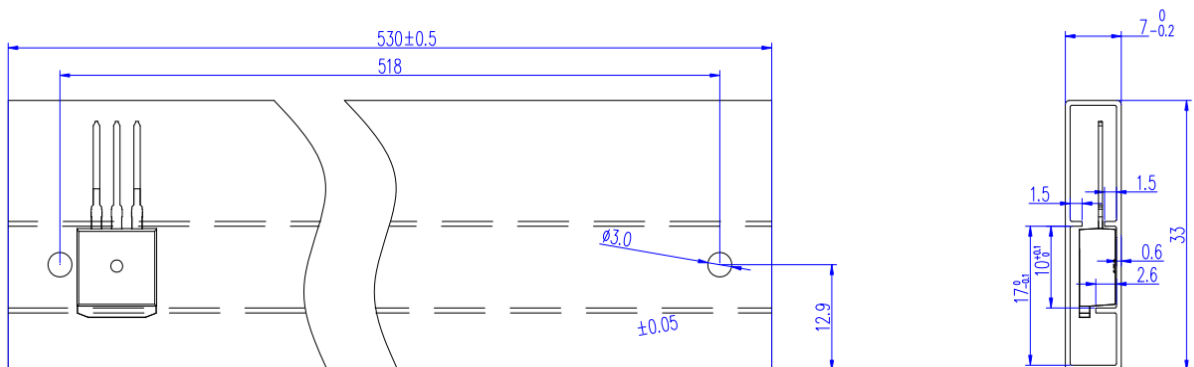
[ TO-262 ]

Unit : mm



SYMBOL	DIMENSIONS			NOTES
	MIN	NOM	MAX	
A	9.95		10.20	
B	23.85		24.05	
C	9.40		9.60	
D	4.95		5.25	
E	1.35		1.40	
F	0.80		0.85	
G	2.70		3.40	
H	4.45		4.55	
J	2.20		2.60	
K	0.48		0.52	
L	1.30		1.35	

## Delivery Mode



Package	Outline	Tube	Inner Box	Per Carton
TO-262	TUBE	50	1,000	5,000