



## JST04G-800SWD 4A TRIAC

Rev.A.1.0

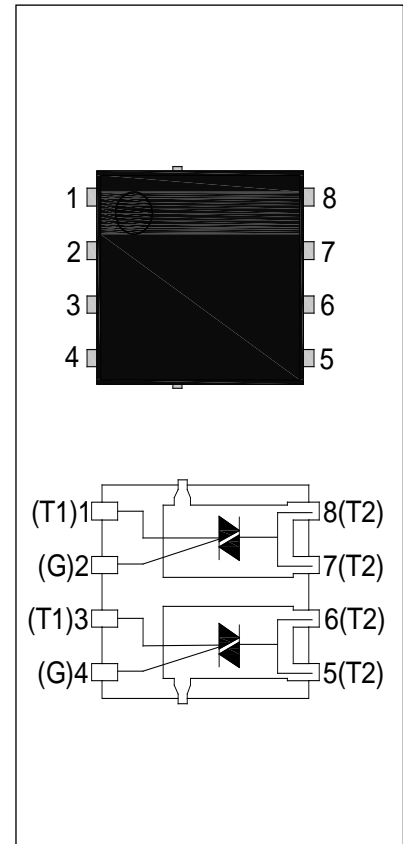
### DESCRIPTION:

The JST04G-800SWD contains two independent triacs. It is suitable for general purpose AC switching. It can be used as an ON/OFF function in applications such as heating regulation, induction motor starting circuits, for phase control operation in light dimmers, motor speed controllers, Mahjong machines, fans.

JST04G-800SWD snubberless triac is especially recommended for use on inductive loads. It can be driven directly through the MCU I/O port. Package DFN5\*6-8L is RoHS compliant.

### MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	4	A
$V_{DRM}/V_{RRM}$	800	V
$I_{GT\ I/II/III}$	10/10/10	mA



### ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage junction temperature range	$T_{stg}$	-40-150	°C
Operating junction temperature range	$T_j$	-40-125	°C
Repetitive peak off-state voltage ( $T_j=25^\circ\text{C}$ )	$V_{DRM}$	800	V
Repetitive peak reverse voltage ( $T_j=25^\circ\text{C}$ )	$V_{RRM}$	800	V
RMS on-state current ( $T_c \leq 45^\circ\text{C}$ )	$I_{T(RMS)}$	4	A
Non repetitive surge peak on-state current (full cycle , $t_p=20\text{ms}$ , $T_j=25^\circ\text{C}$ )	$I_{TSM}$	40	A
Non repetitive surge peak on-state current (full cycle , $t_p=16.6\text{ms}$ , $T_j=25^\circ\text{C}$ )		44	
$I^2t$ value for fusing ( $t_p=10\text{ms}$ , $T_j=25^\circ\text{C}$ )	$I^2t$	8	$\text{A}^2\text{s}$
Critical rate of rise of on-state current ( $I_G=2 \times I_{GT}$ , $f=100\text{Hz}$ , $T_j=125^\circ\text{C}$ )	$di/dt$	50	$\text{A}/\mu\text{s}$
Peak gate current ( $t_p=20\mu\text{s}$ , $T_j=125^\circ\text{C}$ )	$I_{GM}$	4	A

Average gate power dissipation ( $T_j=125^\circ\text{C}$ )	$P_{G(AV)}$	0.5	W
Peak gate power	$P_{GM}$	10	W
Peak pulse voltage ( $T_j=25^\circ\text{C}$ ; non-repetitive, off-state; FIG.8)	$V_{pp}$	3.5	kV

**ELECTRICAL CHARACTERISTICS** ( $T_j=25^\circ\text{C}$  unless otherwise specified)

Symbol	Test Condition	Quadrant	Value		Unit
$I_{GT}$	$V_D=12\text{V } R_L=33\Omega$	I - II - III	MAX.	10	mA
$V_{GT}$		I - II - III	MAX.	1	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.	20	mA
		II		35	
$I_H$	$I_T=100\text{mA}$		MAX.	15	mA
$dV/dt$	$V_D=540\text{V}$ Gate Open $T_j=125^\circ\text{C}$		MIN.	1000	V/ $\mu\text{s}$
$(dI/dt)_c$	$(dV/dt)_c=10\text{V}/\mu\text{s}, T_j=125^\circ\text{C}$		MIN.	2.5	A/ms
$t_{on}$	$I_G=20\text{mA } I_A=200\text{mA } I_R=20\text{mA}$ $T_j=25^\circ\text{C}$		TYP.	2.5	$\mu\text{s}$
$t_{off}$				25	

**STATIC CHARACTERISTICS**

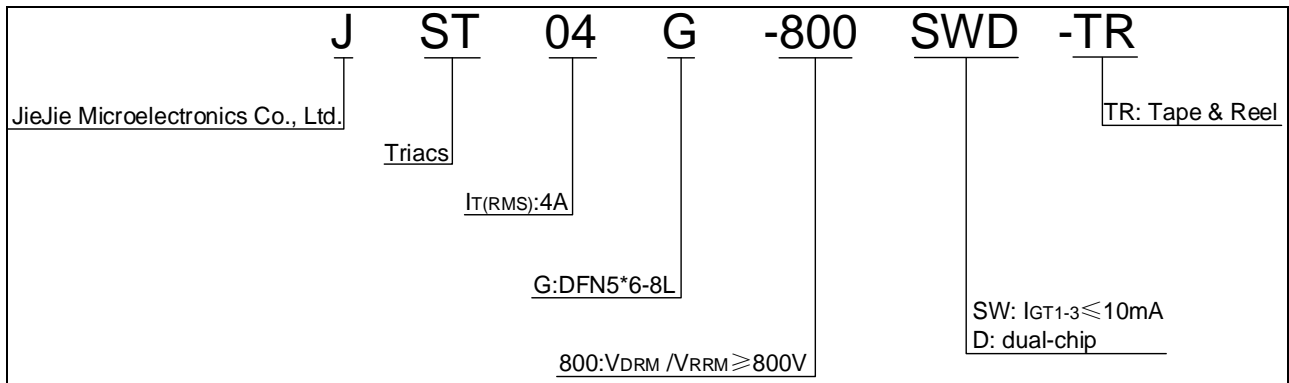
Symbol	Parameter		Value(MAX.)	Unit
$V_{TM}$	$I_{TM}=5\text{A } t_p=380\mu\text{s}$	$T_j=25^\circ\text{C}$	1.4	V
$V_{TO}$	Threshold voltage	$T_j=125^\circ\text{C}$	0.8	V
$R_D$	Dynamic resistance	$T_j=125^\circ\text{C}$	66	$\text{m}\Omega$
$I_{DRM}$	$V_D=V_{DRM} V_R=V_{RRM}$	$T_j=25^\circ\text{C}$	5	$\mu\text{A}$
$I_{RRM}$		$T_j=125^\circ\text{C}$	0.25	mA

**THERMAL RESISTANCES**

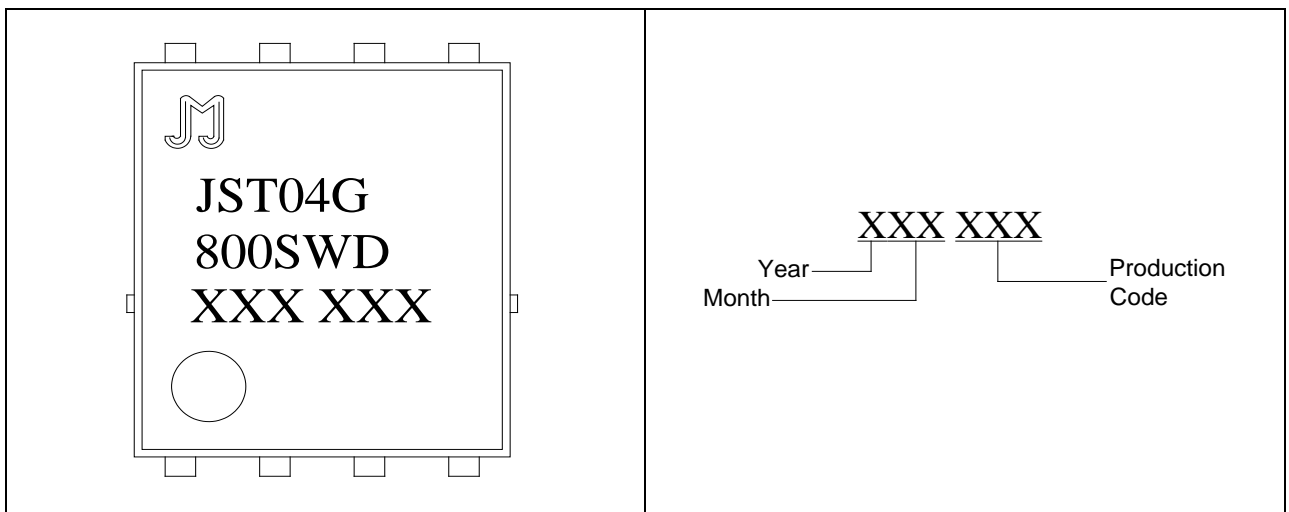
Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (AC)	15	$^\circ\text{C}/\text{W}$
$R_{th(j-a)}$	junction to ambient (AC)	65	$^\circ\text{C}/\text{W}$

\*Note: Testing one of the chips to obtain the value of  $R_{th(j-c)}$  and  $R_{th(j-a)}$ .

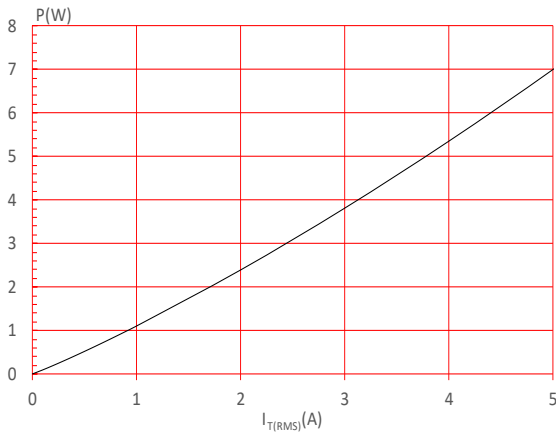
ORDERING INFORMATION



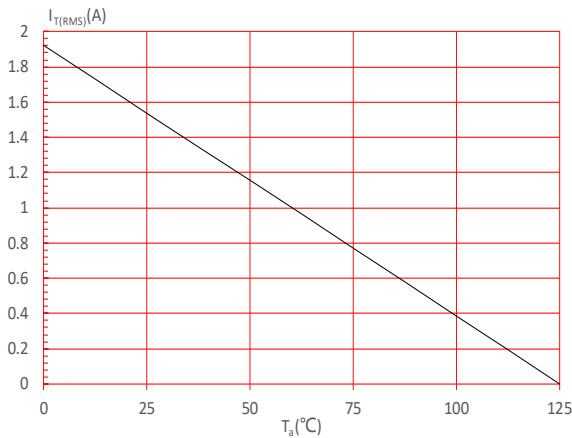
MARKING



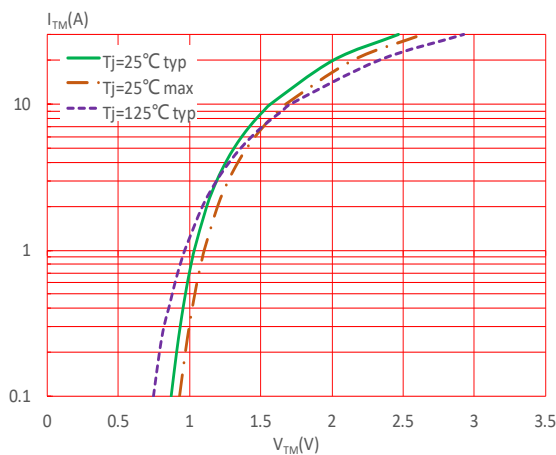
**FIG.1:** Maximum power dissipation versus RMS on-state current



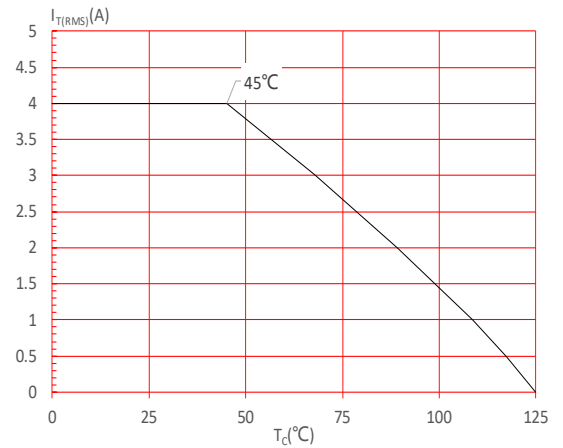
**FIG.3:** RMS on-state current versus ambient temperature (printed circuit board FR4,copper thickness:35μm)(full cycle)



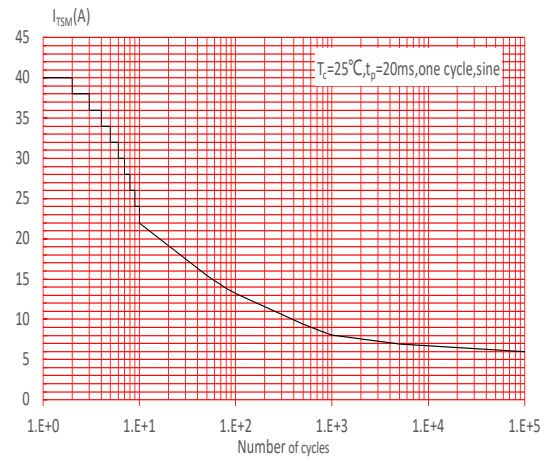
**FIG.5:** On-state characteristics



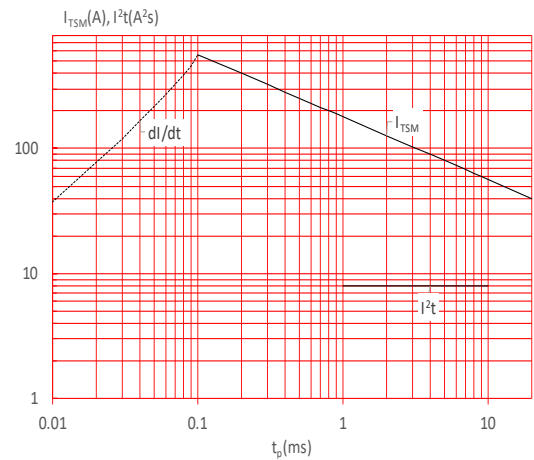
**FIG.2:** RMS on-state current versus case temperature



**FIG.4:** Surge peak on-state current versus number of cycles



**FIG.6:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 20\text{ms}$ , and corresponding value of  $I^2t$  ( $di/dt < 50\text{A}/\mu\text{s}$ )



**FIG.7:** Relative variations of gate trigger current, holding current and latching current versus junction temperature

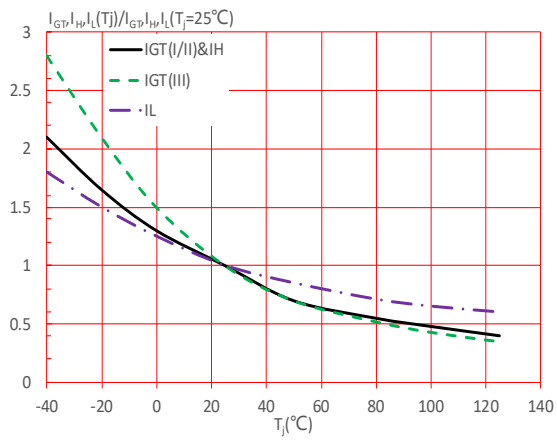
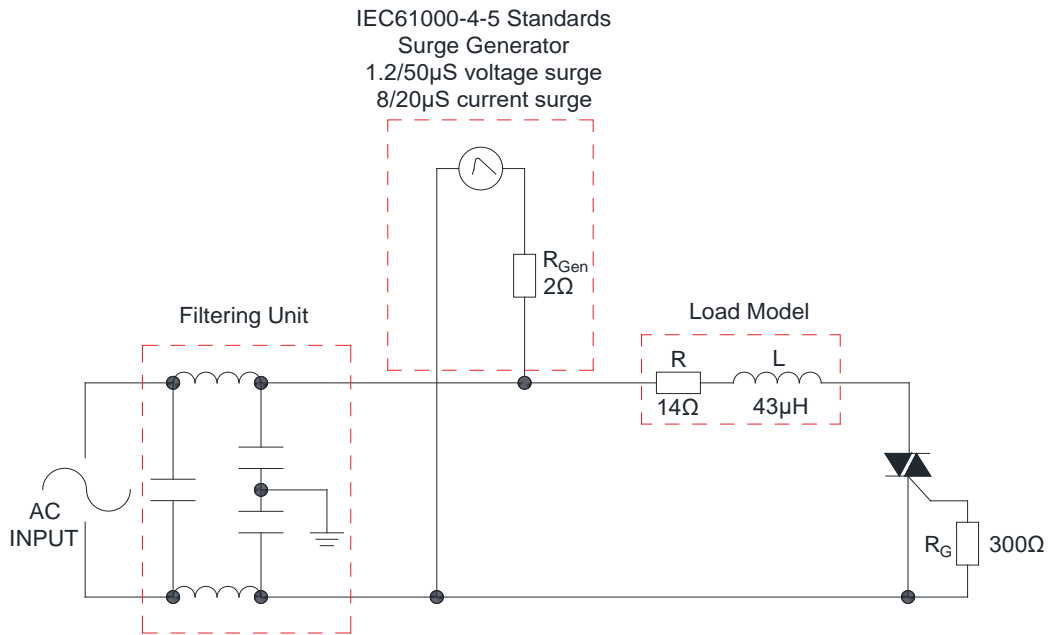
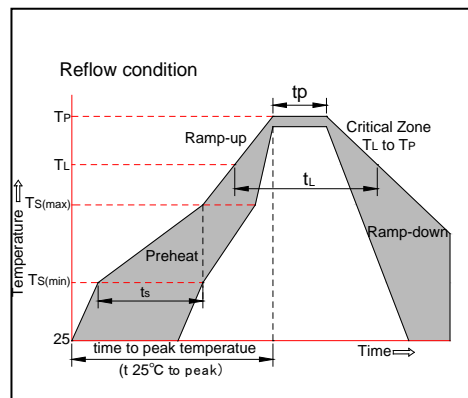


FIG.8: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards



**SOLDERING PARAMETERS**

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ( $T_{s(min)}$ )	+150°C
	-Temperature Max( $T_{s(max)}$ )	+200°C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak)		3°C/sec. Max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature( $T_L$ ) (Liquidus)	+217°C
	-Temperature( $t_L$ )	60-150 secs.
Peak Temp ( $T_p$ )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp ( $t_p$ )		20-40secs.
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp ( $T_p$ )		8 min. Max
Do not exceed		+260°C



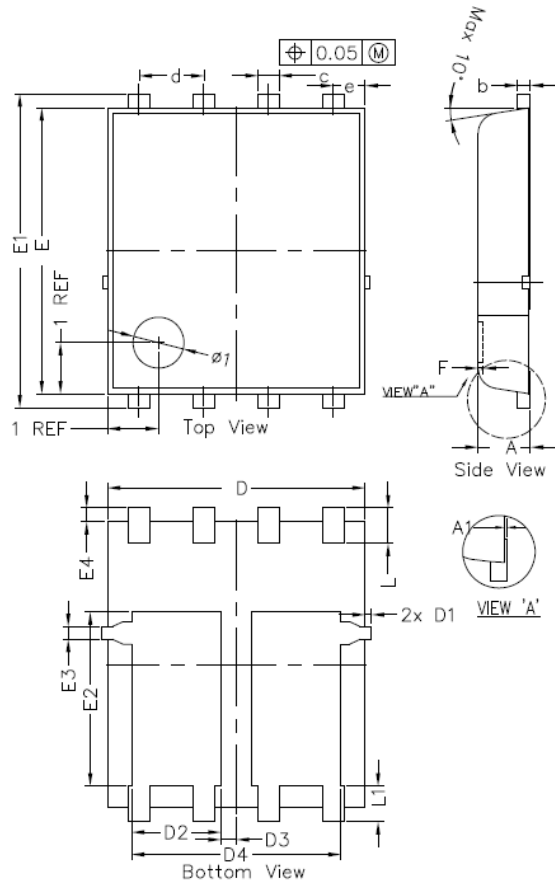
**ORDERING INFORMATION**

Order code	Voltage $V_{DRM}/V_{RRM}$ (V)	IGT(mA)	Package	Base qty. (pcs)	Delivery mode
		I - II - III			
JST04G-800SWD-TR	800	10	DFN5*6-8L	5000	Tape & Reel

**Document Revision History**

Date	Revision	Changes
Aug.1, 2023	A.1.0	Last updated

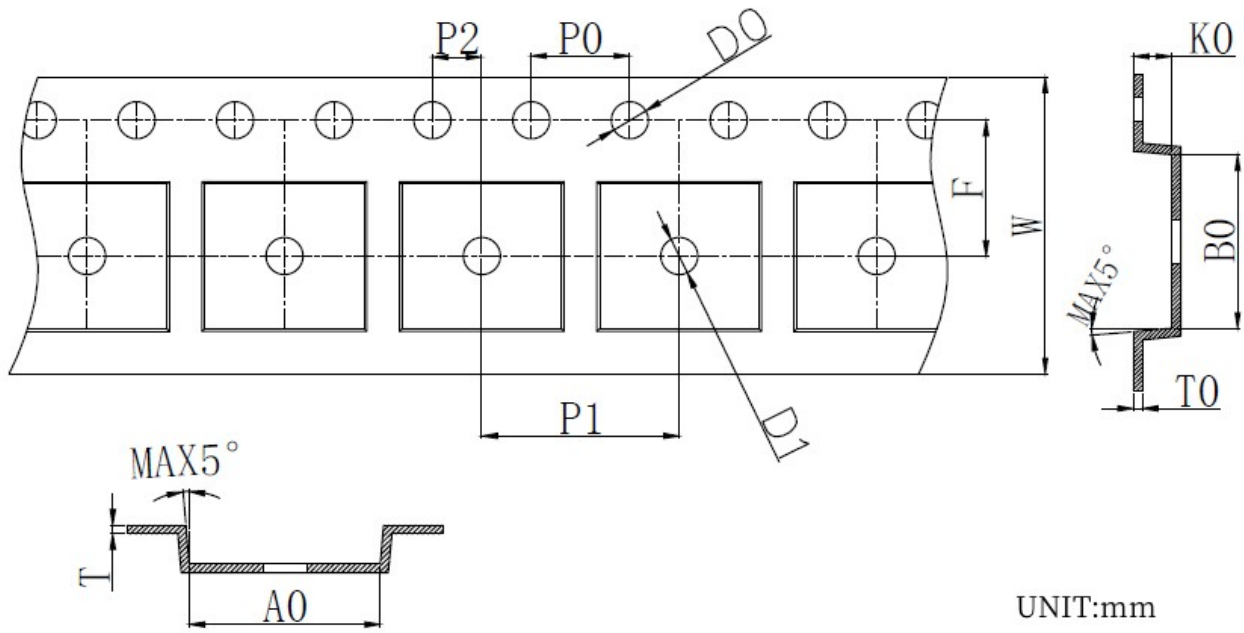
PACKAGE MECHANICAL DATA



SYMBOLS	DIMENSION IN MM			DIMENSION IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
* A	0.900	1.000	1.100	0.035	0.039	0.043
A1	0.000	---	0.050	0.000	---	0.002
b	0.246	0.254	0.312	0.010	0.010	0.012
* c	0.310	0.410	0.510	0.012	0.016	0.020
d	1.27 BSC			0.050 BSC		
* D	4.950	5.050	5.150	0.195	0.199	0.203
* D1	---	---	0.125	---	---	0.005
* D2	1.650	1.750	1.850	0.065	0.069	0.073
D3	0.200	0.300	0.400	0.008	0.012	0.016
D4	4.000	4.100	4.200	0.157	0.161	0.165
e	0.62 BSC			0.024 BSC		
* E	5.500	5.600	5.700	0.217	0.220	0.224
* E1	6.050	6.150	6.250	0.238	0.242	0.246
E2	3.310	3.410	3.510	0.130	0.134	0.138
E3	0.150	0.250	0.350	0.006	0.010	0.014
* E4	0.175	0.275	0.375	0.007	0.011	0.015
F	-	-	0.100	-	-	0.004
* L	0.500	0.600	0.700	0.02	0.02	0.03
L1	0.600	0.700	0.800	0.02	0.03	0.03

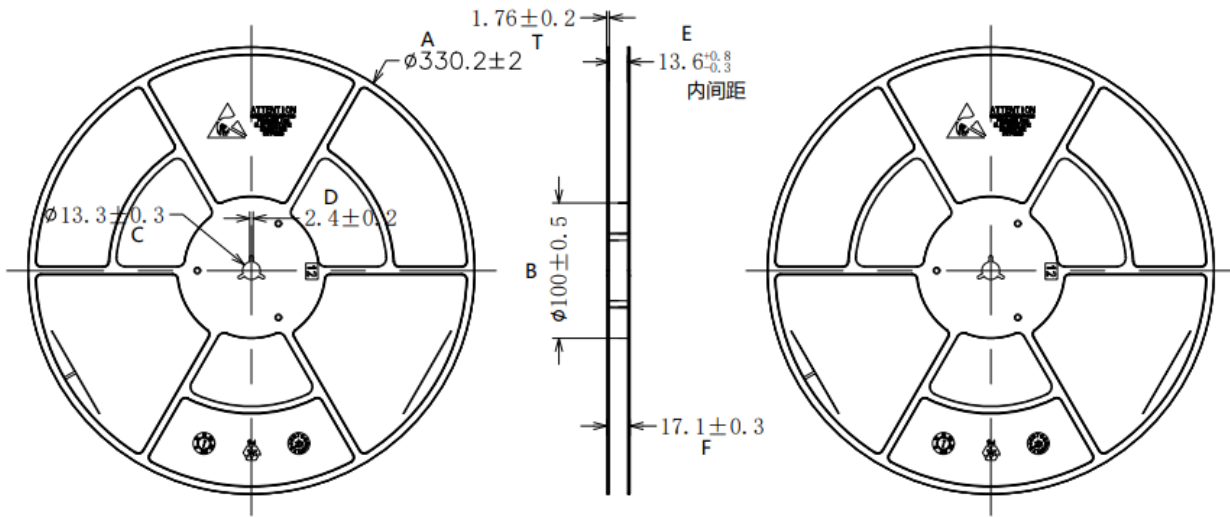
NOTE:  
 1. PACKAGE BODY SIZE EXCLUDE MOLD FLASH AND GATE BURR.  
 MOLD FLASH AT THE NON-LEAD SIDES SHOULD BE LESS THAN 5 MIL EACH SIDE.  
 2. CONTROLLING DIMENSION IS MILLIMETER, INCH FOR REFERENCE ONLY.

DELIVERY MODE



UNIT:mm

SYMBOL	A0	B0	K0	P0	P1	P2
SPEC	6.60±0.10	5.50±0.10	1.30±0.10	4.00±0.10	8.00±0.10	2.00±0.05
SYMBOL	T	E	F	D0	D1	W
SPEC	0.25±0.03	1.75±0.10	5.50±0.10	1.55±0.05	1.55±0.10	12.00 <sup>+0.3</sup> <sub>-0.1</sub>



$A \pm 2$	$B \pm 0.5$	$C \pm 0.3$	$D \pm 0.2$	$E^{+0.8}_{-0.3}$	$F \pm 0.3$	$T \pm 0.2$
330.2	$\phi 100$	$\phi 13.3$	2.4	13.6	17.1	1.76

PACKAGE	OUTLINE	REEL (PCS)	PER CARTON (PCS)	TAPE & REEL
DFN5*6-8L	TAPING	5,000	50,000	13 inch

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