



# DATA SHEET

SEMICONDUCTOR

SK52~SK510

**SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER**

**VOLTAGE- 20 to 100 Volts CURRENT- 5.0 Amperes**

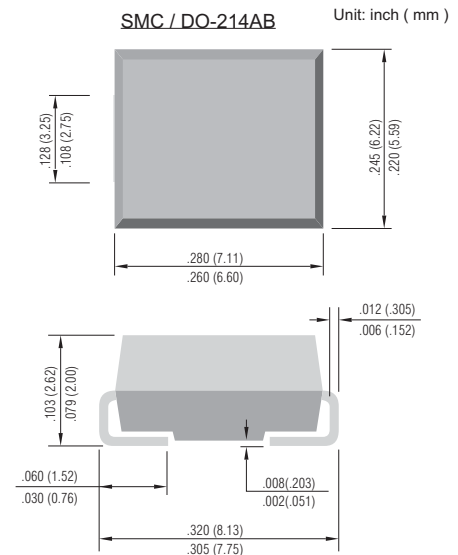


## FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- For surface mounted applications
- Low profile package
- Built-in strain relief
- Metal to silicon rectifier. majority carrier conduction
- Low power loss,high efficiency
- High surge capacity
- For use in low voltage high frequency inverters, free wheeling, and polarity protection applications
- High temperature soldering guaranteed: 260°C /10 seconds at terminals

## MECHANICAL DATA

Case: JEDEC DO-214AB molded plastic  
 Terminals:Solder plated, solderable per MIL-STD-750, Method 2026  
 Polarity: Color band denotes positive end (cathode)  
 Standard packaging: 16mm tape (EIA-481)  
 Weight: 0.007 ounce, 0.21 gram



## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.  
 Resistive or inductive load.

	SYMBOLS	SK52	SK53	SK54	SK55	SK56	SK58	SK59	SK510	UNITS
Maximum Recurrent Peak Reverse Voltage	$V_{RRM}$	20.0	30.0	40.0	50.0	60.0	80.0	90.0	100.0	V
Maximum RMS Voltage	$V_{RMS}$	14.0	21.0	28.0	35.0	42.0	56.0	63.0	70.0	v
Maximum DC Blocking Voltage	$V_{DC}$	20.0	30.0	40.0	50.0	60.0	80.0	90.0	100.0	V
Maximum Average Forward Rectified Current at $T_L$ (See figure 1)	$I(AV)$	5.0								A
Peak Forward Surge Current 8.3ms single half sine-wave superimposed on rated load (JEDEC method)	$I_{FSM}$	100.0								A
Maximum Instantaneous Forward Voltage at 5.0A (Note 1)	$V_F$	0.50		0.75		0.85				V
Maximum DC Reverse Current (Note 1) $T_a = 25^\circ C$ at Rated DC Blocking Voltage $T_a = 100^\circ C$	$I_R$					0.5				mA
						20.0				
Maximum Thermal Resistance(Note 2)	$R_{\theta JL}$ $R_{\theta JA}$					17.0				$^\circ C/W$
						55.0				
Operating Temperature Range	$T_J$					-55 to +150				$^\circ C$
Storage Temperature Range	$T_{STG}$					-55 to +150				$^\circ C$
Typical total capacitance (1MHz, $V_R = 4V$ )	$C_T$					280				pF

NOTES:

- A.Pulse Test with  $PW = 300\mu sec$ , 2% Duty Cycle.
- B.Mounted on P.C. Board with  $14mm^2$  (.013mm thick) copper pad areas.

# DEVICE CHARACTERISTICS

## SK52~SK510

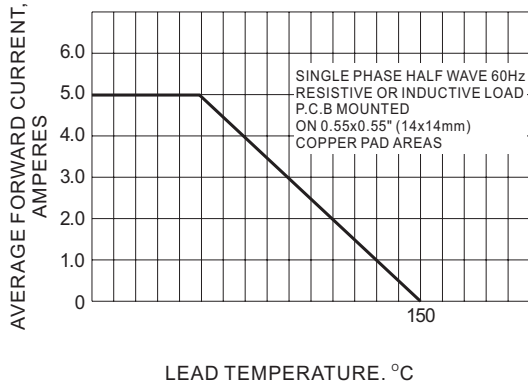


Fig.1- FORWARD CURRENT DERATING CURVE

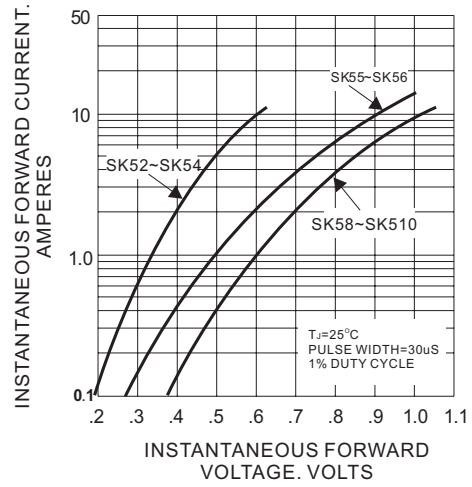


Fig.2- TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

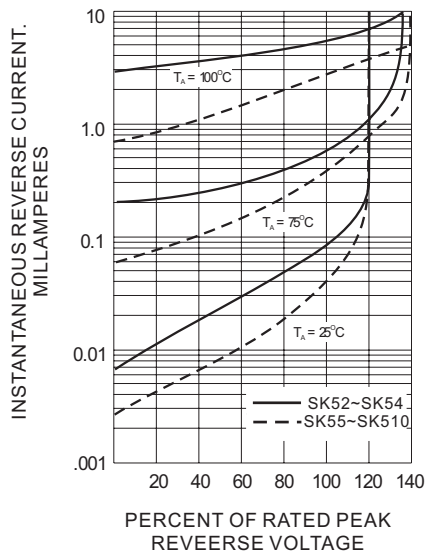


Fig.3- TYPICAL REVERSE CHARACTERISTICS

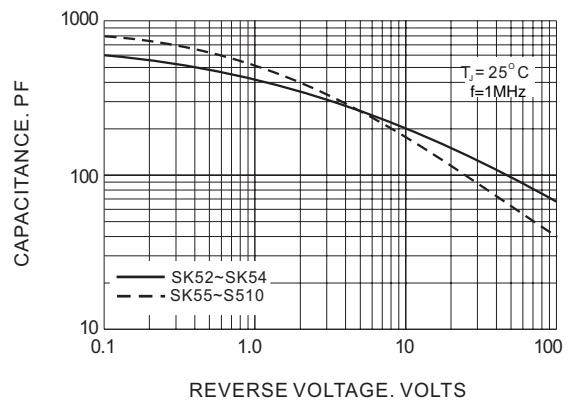


Fig.4- TYPICAL JUNCTION CAPACITANCE

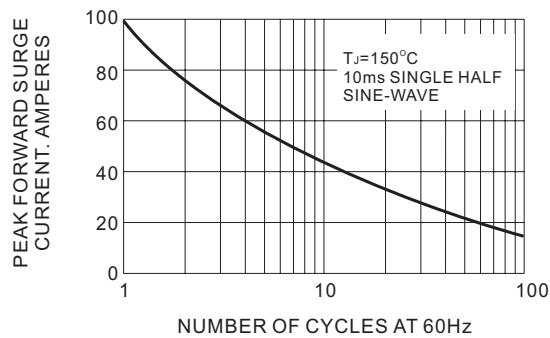
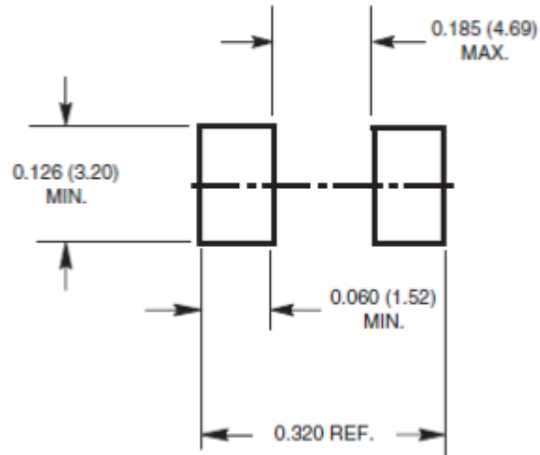
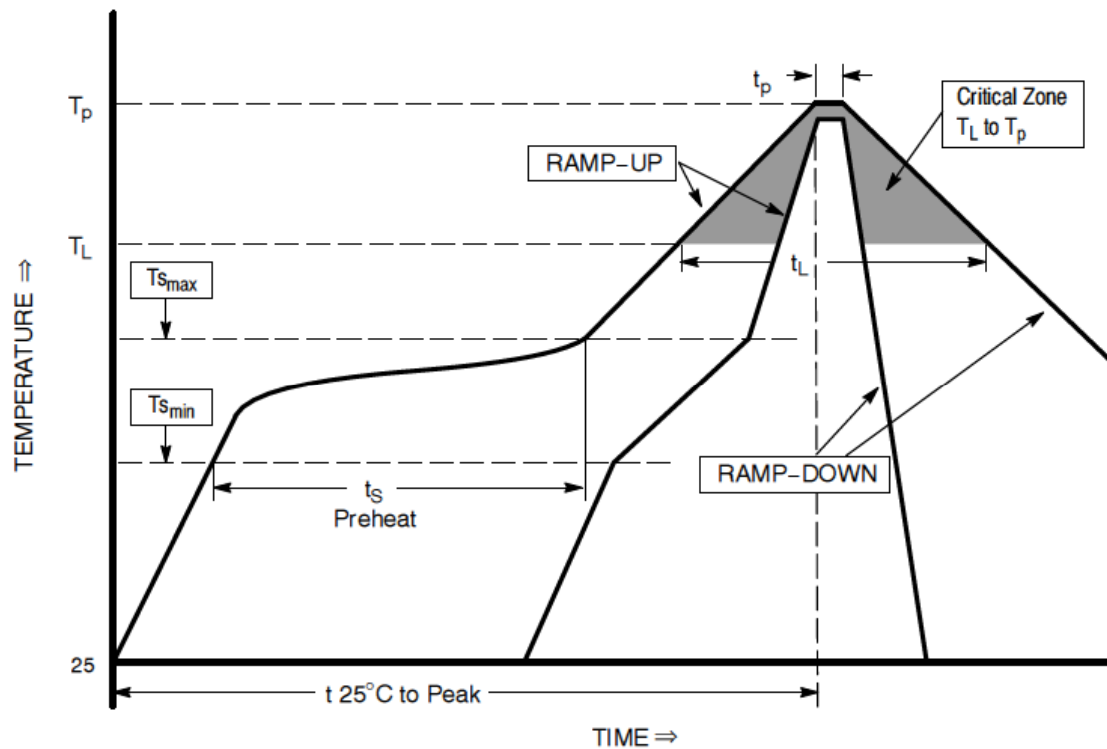


Fig.5- MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT



### Mounting Pad Layout





Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate ( $T_{s_{max}}$ to $T_p$ )	3°C/second max
Preheat Temperature Min ( $T_{s_{min}}$ ) Temperature Max ( $T_{s_{max}}$ ) Time ( $t_{s_{min}}$ to $t_{s_{max}}$ )	150°C 200°C 60-180 seconds
Time maintained above Temperature ( $T_T$ ) Time ( $t_T$ )	217°C 60-150 seconds
Peak Classification Temperature ( $T_p$ )	260°C +5/-0
Time within 5°C of actual Peak Temperature ( $t_p$ )	20-40 seconds
Ramp-Down Rate	6°C/second max
Time 25°C to Peak Temperature	8 minutes max

Note : According to J-STD-020D.



### 1、Solder Composition:

Composition	Sn	Pb	Ag	Sb	Cu	Bi	Zn	Fe	Al	As	Cd
96.5Sn3.0Ag0.5Cu	rest	<0.1	3.0 ±0.2	<0.12	0.5 ±0.05	<0.1	<0.002	<0.02	<0.002	<0.03	<0.002

### 2、Solder Stick Parameter:

Liquid phase temp (°C)	221
Solid phase temp (°C)	216

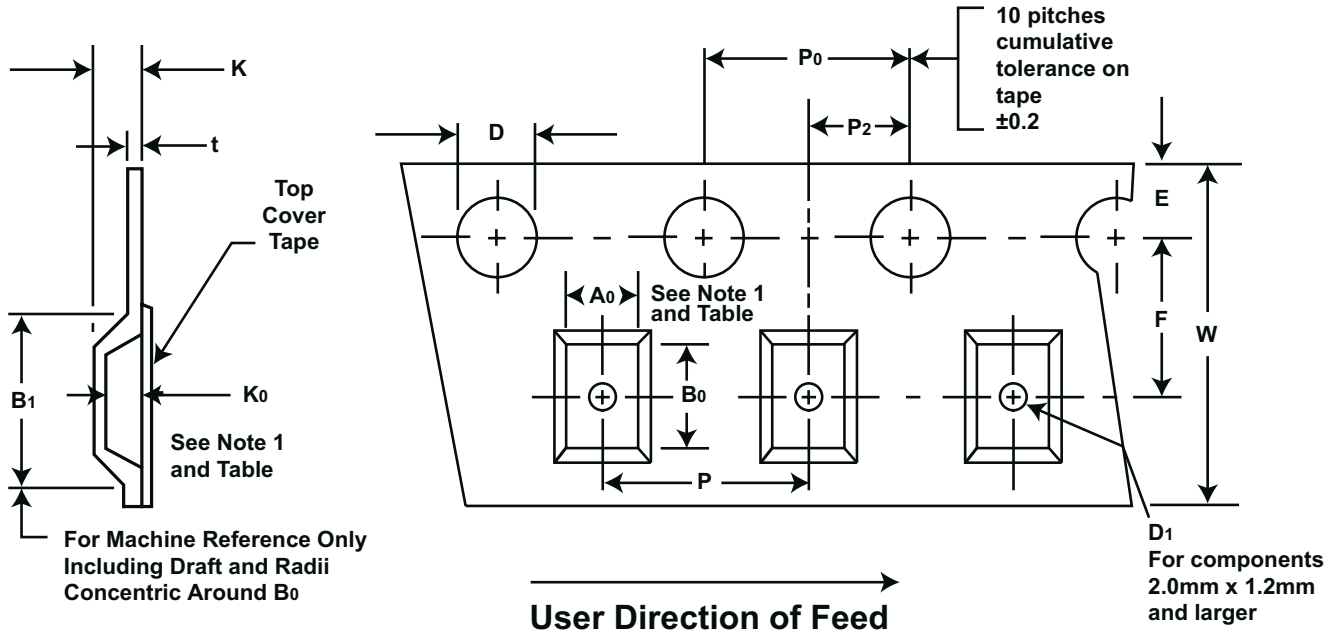
Extension strength (kgf/mm <sup>2</sup> )	3.7
Elongation	33

### 3、Solder Paste Parameter:

Item		Property	Testing Method
Liquid resistivity ( Ω . m)		1 × 10 <sup>3</sup> 以上	JIS Z 3197 8.1.1 (1999)
Flux content (wt %)		10.5 ± 0.03	JIS Z 3197 8.1.2(1999)
Halogen content (wt %)		0.07 ± 0.02	JIS Z 3197 8.1.4.2.1(1999)
Copper mirror corrosion test		Accept	JIS Z 3197 8.1.4.2.3(1999)
Powder (u m)		GQ	JIS Z 3284 Attach file 1
		Ball shape 10-38	
Melt point (°C)		G K	DSC
		Ball shape 20-45	
Flux fluoride content		None	JIS Z 3284 Attach file 2
Insulate resistivity Ω	40°C 90%	>1 × 10 <sup>12</sup>	JIS Z 3284 Attach file 3
	85°C 85%	>5 × 10 <sup>8</sup>	
Flux residuum corrosion test		No corrosion	JIS Z 3284 Attach file 4
Printing test		GQ	JIS Z 3284 Attach file 5
		0.4mm pitch	
Viscosity (Pa.s)		180 ± 20	JIS Z 3284 Attach file 6
Printing cave		None 0.2mm solder bridge	JIS Z 3284 Attach file 7
Heating cave		None 0.2mm solder bridge	JIS Z 3284 Attach file 8
Adhesive	Beginning	1 . > 0 N	JIS Z 3284 Attach file 9
	After 24 hrs.	1 . > 0 N	
Dewetting		2 grade (copper plate)	JIS Z 3284 Attach file 10
Solder ball test	Beginning	1 - 3 grade	JIS Z 3284 Attach file 11
	After 24 hrs.	1 - 3 grade	
Residuum adhesive after soldering		None	JIS Z 3284 Attach file 12
Transfer test		None	JIS Z 3284 Attach file 13



## SURFACE MOUNT PACKAGING



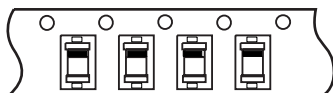
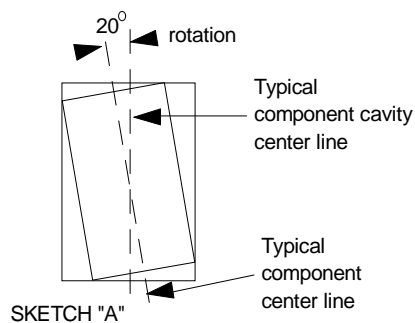
### EMBOSSED TAPE

ALL DIMENSION IN MILLIMETERS

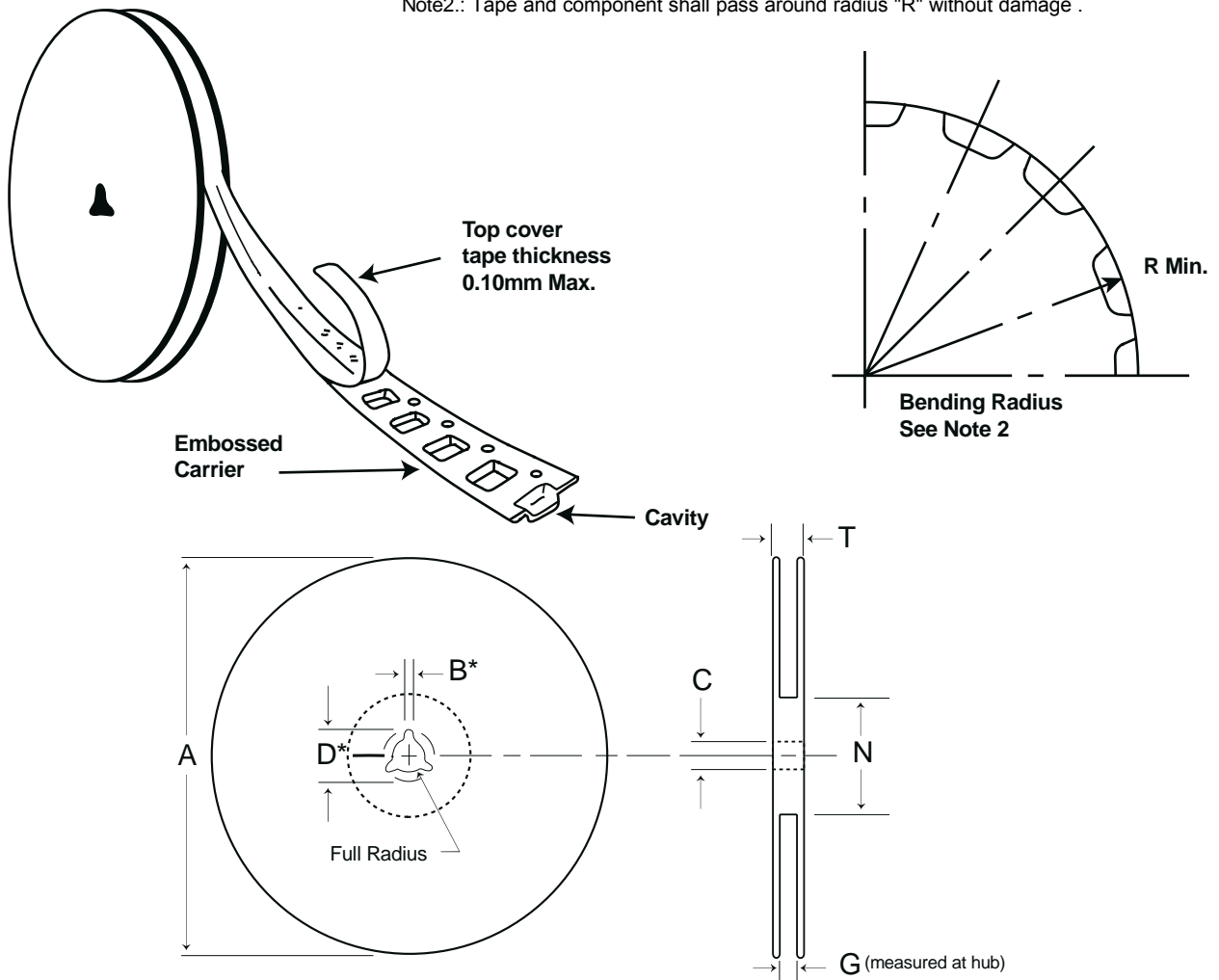
Tape Size	D	E	Po	t(Max)	Ao Bo Ko	Constant Dimensions
8, 12, 16 mm	$1.55 + 0.1 - 0.0$	$1.75 \pm 0.10$	$4.0 \pm 0.10$	0.400	See Note 1	

Product Type	Tape Size	B1 Max.	D1 Min.	F	K Max.	P2	R	W	P
SOT-23/323/363 SOD-123/323	8mm	4.5	1.0	$3.5 \pm 0.05$	2.4	$2.0 \pm 0.05$	25	$8.0 \pm 0.3$	$4.0 \pm 0.1$
SMA SMF SMB MINI DIP	12mm	8.2	1.5	$5.5 \pm 0.05$	4.5	$2.0 \pm 0.05$	30	$12.0 \pm 0.3$	$8.0 \pm 0.1$
SMC DFS	16mm	12.1		$7.5 \pm 0.1$	3.29 3.70	$2.0 \pm 0.1$ $4.0 \pm 0.1$	40 50	$16.0 \pm 0.3$	$12.0 \pm 0.1$

Note1.: A0B0K0 are determined by component size. The clearance between the component and the cavity must be within 0.05(.002) min. to 0.50 (.020) max. for 8 mm tape. 0.05(.002) min. to 0.65 (.025) max. for 12mm tape. 0.15 (0.006) min. to 0.90 (.035) max. for 16mm tape and 0.05(0.002) min. to 1.00 (.039) max. for 24 mm tape and larger. the component cannot rotate more than 20° within the determined cavity, see sketch "A" below



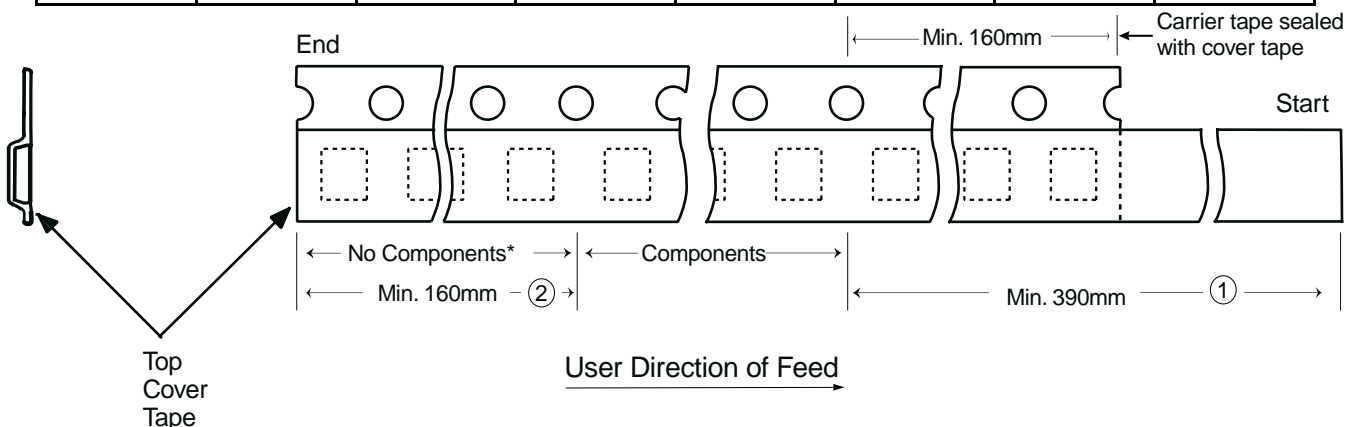
Note2.: Tape and component shall pass around radius "R" without damage .



\* Drive spokes optional. If used, dimensions with asterisks apply.

ALL DIMENSION IN MILLIMETERS

Tape Size	A Max.	B* Max.	C	D* Max.	N Min.	G	T Max.
8mm	178	1.5	13.0±0.2	20.2	50	8.4 +1.5 -0.0	14.4
12mm	330	1.5	13.0±0.2	20.2	50	12.4 +2.0 -0.0	18.4
16mm	330	1.5	13.0±0.2	20.2	50	16.4 +2.0 -0.1	22.4



- Notes:
1. There shall be a leader of 230mm [9.05] minimum which may consist of carrier and/or cover tape or a start tape followed by a minimum of 160mm [6.30] of empty carrier tape sealed with cover tape.
  2. There shall be a trailer of 160mm [6.30] minimum of empty carrier tape sealed with cover tape. The entire carrier tape must release from the reel hub as the last portion of the tape unwinds from the reel without damage to the carrier tape and the remaining components in the cavities.

## PACKAGING

### BOX SIZE:

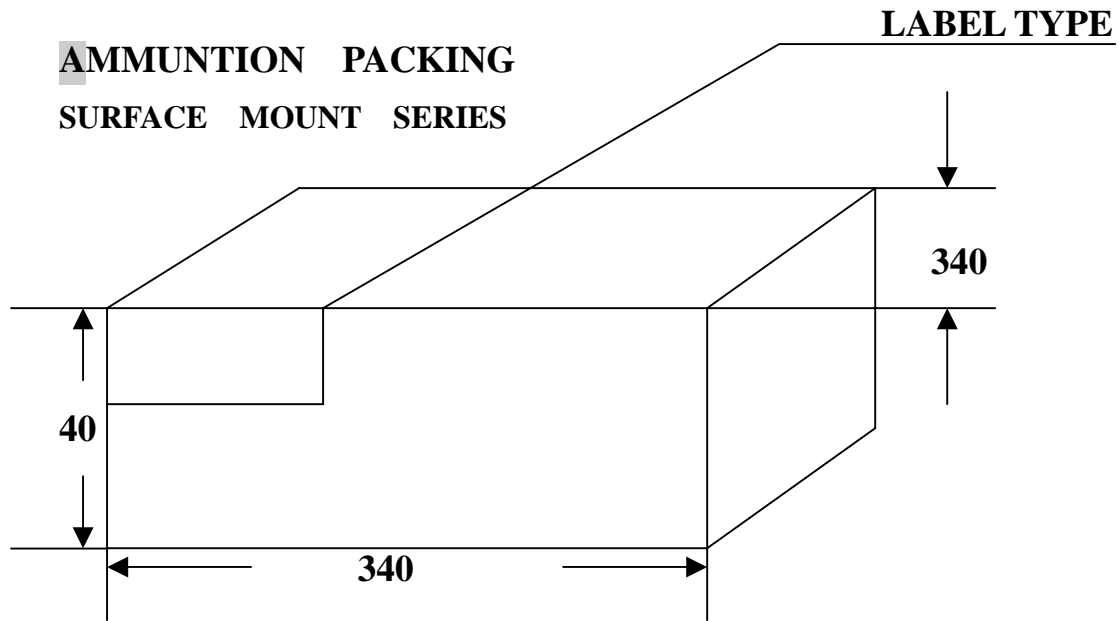
PRODUCTS OUTLINE	DIMENSION (mm)			Q'TY PER BOX ( PER REEL )
	A	B	C	
<b>SOT-23/323/363</b> <b>SOD-123/323</b>	187	187	70	12000 ( 3000 )
<b>SMA/SMF</b>	340	340	40	15000
<b>SMB</b>				6000 ( 3000 )
<b>MINI DIP</b>				
<b>SMC</b>				
<b>DFS</b>				3000 ( 1500 )

### TUBE SIZE:

PRODUCTS OUTLINE	PACKAGEING SIZE (mm)		Q'TY PER BOX ( PER TUBE )
	TUBE	BOX	
<b>DFS</b>	444*15*5.9	490*155*145	9000 ( 50 )

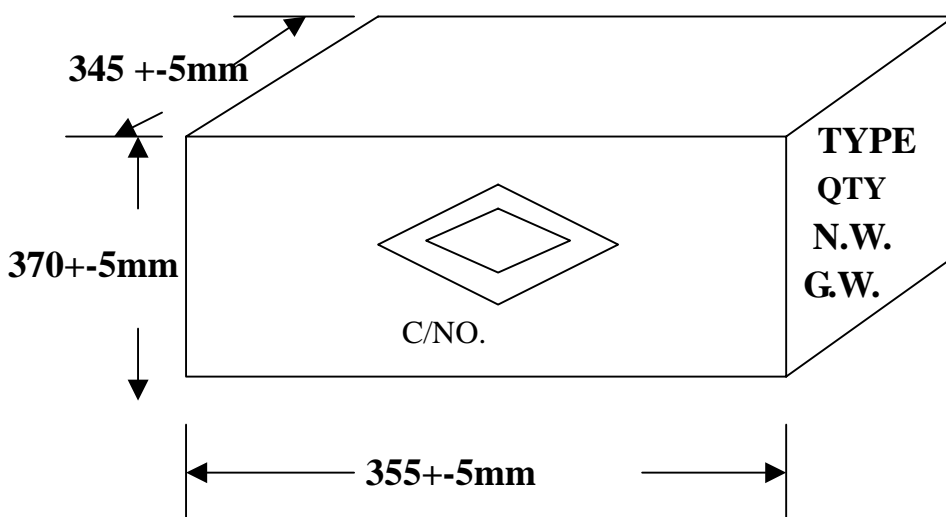


**AMMUNITION PACKING**  
**SURFACE MOUNT SERIES**

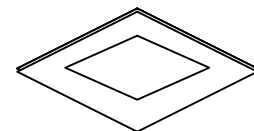


**Box Dimensions :mm**  
**Quantity per Box :7.5Kpcs/Roll,2Rolls/Box,15Kpcs/Box**

**CARTON**



**SHIPPING MARK**



**SIDEMARK**

**TYPE:**  
**QTY:**  
**N.W.:**  
**G.W.:**

**Box dimensions: mm**  
**Quantity per Box:15kpcs/Box. 8Box/carton,120kpcs/carton**