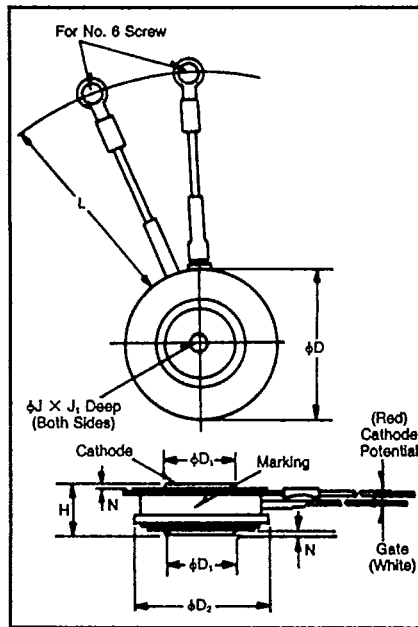


**POWEREX****T620/T630**

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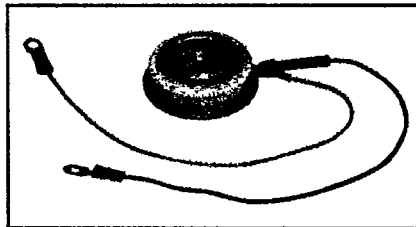
**Phase Control SCR****150-300 Amperes Avg****100-1600 Volts**

**T62**  
**Outline Drawing**

Dimensions	Inches		Millimeters	
	Min.	Max.	Min.	Max.
$\phi D$	1.610	1.650	40.89	41.91
$\phi D_1$	.745	.755	18.92	19.18
$\phi D_2$	1.420	1.460	36.07	37.08
H	.500	.560	12.70	14.22
$\phi J$	.135	.145	3.43	3.68
$J_1$	.072	.082	1.83	2.08
L	7.75	8.50	196.85	215.90
N	.030	—	.76	—

Creep Distance—.34 in. min. (8.64 mm)  
 Strike Distance—.26 in. min. (6.60 mm).  
 (In accordance with NEMA standards.)  
 Finish—Nickel Plate.  
 Approx. Weight—2.3 oz. (66 g).

1. Dimension "H" is clamped dimension.



**T620/T630**  
**Phase Control SCR**  
 150-300 Amperes/100-1600 Volts

**Description**

Powerex Silicon Controlled Rectifiers (SCR) are designed for phase control applications. These are all-diffused, Press-Pak (Pow-R-Disc) devices employing the field-proven amplifying (di/namic) gate.

**Features:**

- Low On-State Voltage
- High di/dt
- High dv/dt
- Hermetic Packaging
- Excellent Surge and I<sup>2</sup>t Ratings

**Applications:**

- Power Supplies
- Battery Chargers
- Motor Control
- Light Dimmers
- VAR Generators

**Ordering Information**

Example: Select the complete eight digit part number you desire from the table – i.e. T6200820 is a 800 Volt, 200 Ampere Phase Control SCR.

Type	Voltage		Current	
	V <sub>ORM</sub> V <sub>RRM</sub>	Code	I <sub>r</sub> (avg)	Code
T630	100	01	150	15
	200	02	200	20
	300	03	300	30
	400	04		
	500	05		
T620	600	06		
	700	07		
	800	08		
	900	09		
	1000	10		
	1100	11		
	1200	12		
	1300	13		
	1400	14		
	1500	15		
	1600	16		



T-25-19

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T620/T630

Phase Control SCR

150-300 Amperes Avg/100-1600 Volts

### Absolute Maximum Ratings

	Symbol	T620 -- 15 T630 -- 15	T620 -- 20 T630 -- 20	T620 -- 30 T630 -- 30	Units
RMS On-State Current	$I_{T(RMS)}$	235	315	470	Amperes
Average On-State Current	$I_{T(av)}$	150	200	300	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz) <sup>①</sup>	$I_{TSM}$	3300	4000	5500	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz) <sup>①</sup>	$I_{TSM}$	3000	3650	5000	Amperes
Critical Rate-of-Rise of On-State Current (Non-Repetitive) <sup>② ③ ④</sup>	di/dt	800	800	800	Amperes/ $\mu$ s
Critical Rate-of-Rise of On-State Current (Repetitive)	di/dt	150	150	150	Amperes/ $\mu$ s
$I^2t$ (for Fusing), 8.3 milliseconds	$I^2t$	45,000	64,400	120,000	A <sup>2</sup> sec
Peak Gate Power Dissipation	$P_{GM}$	16	16	16	Watts
Average Gate Power Dissipation	$P_{G(av)}$	3	3	3	Watts
Storage Temperature	$T_{STG}$	-40 to 150	-40 to 150	-40 to 150	°C
Operating Temperature	$T_J$	-40 to 125	-40 to 125	-40 to 125	°C
Mounting Force <sup>⑤</sup>		1000 to 1400	1000 to 1400	1000 to 1400	lb.
Mounting Force <sup>⑤</sup>		450 to 635	450 to 635	450 to 635	kg

① Consult recommended mounting procedures.

② Applies for zero or negative gate bias.

③ Per JEDEC RS-397, 5.2.2.1.

④ With recommended gate drive.

⑤ Higher dv/dt ratings available, consult factory.

⑥ Per JEDEC standard RS-397, 5.2.2.6.



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T620/T630  
 Phase Control SCR  
 150-300 Amperes Avg/100-1600 Volts

### Electrical and Thermal Characteristics

Characteristics	Symbol	Test Conditions	T620 _ _ 15	T620 _ _ 20	T620 _ _ 30	Units
			T630 _ _ 15	T630 _ _ 20	T630 _ _ 30	
<b>Current—Conducting State Maximums</b>						
Peak On-State Voltage	$V_{TM}$	$I_T = 625A, T_J = 25^\circ C$	2.6	2.05	1.55	Volts
			<b>T620/T630</b>			
<b>Voltage—Blocking State Maximums<sup>ⓐ</sup></b>						
Forward Leakage, Peak	$I_{DRM}$	$T_J = 125^\circ C, V_{DRM} = \text{rated}$		25		mA
Reverse Leakage, Peak	$I_{RRM}$	$T_J = 125^\circ C, V_{RRM} = \text{rated}$		25		mA
<b>Switching</b>						
Typical Turn-Off Time	$t_q$	$I_T = 150A, T_J = 125^\circ C,$ $di_T/dt = 12.5A/\mu\text{sec},$ reapplied $dv/dt = 20V/\mu\text{sec}$ linear to $0.8V_{DRM}$		100		$\mu\text{sec}$
Typical Turn-On Time <sup>ⓑ</sup>	$t_{on}$	$I_T = 100A, V_D = 100V$		5		$\mu\text{sec}$
Min. Critical $dv/dt$ exponential to $V_{DRM}$ <sup>Ⓒ</sup>	$dv/dt$	$T_J = 125^\circ C$		300		$V/\mu\text{sec}$
<b>Thermal</b>						
Maximum Thermal Resistance, <sup>ⓓ</sup> double sided cooling						
Junction to Case	$R_{\theta JC}$			.08		$^\circ C/\text{Watt}$
Case to Sink, Lubricated	$R_{\theta CS}$			.02		$^\circ C/\text{Watt}$
<b>Gate—Maximum Parameters</b>						
Gate Current to Trigger	$I_{GT}$	$T_J = 25^\circ C, V_D = 12V$		150		mA
Gate Voltage to Trigger	$V_{GT}$	$T_J = 25^\circ C, V_D = 12V$		3		Volts
Non-Triggering Gate Voltage	$V_{GDM}$	$T_J = 125^\circ C, \text{rated } V_{DRM}$		.15		Volts
Peak Forward Gate Current	$I_{GTM}$			4		Amperes
Peak Reverse Gate Voltage	$V_{GRM}$			5		Volts

ⓐ Consult recommended mounting procedures.

ⓑ Applies for zero or negative gate bias.

Ⓒ Per JEDEC RS-397, 5.2.2.1.

ⓓ With recommended gate drive.

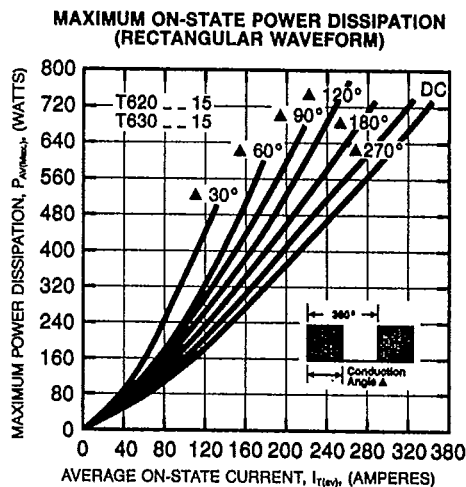
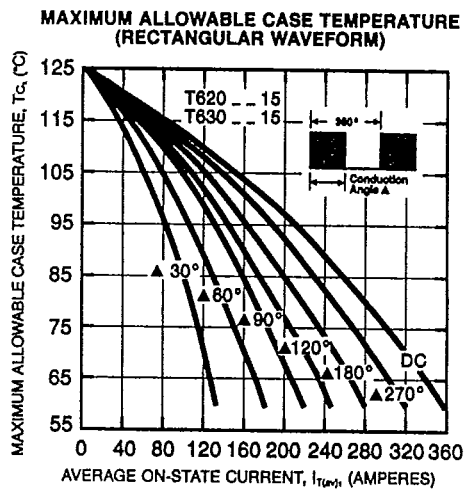
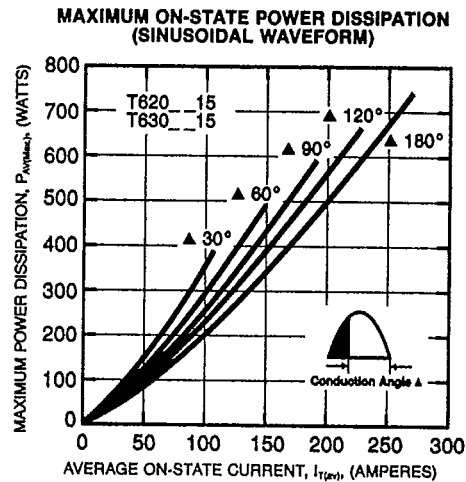
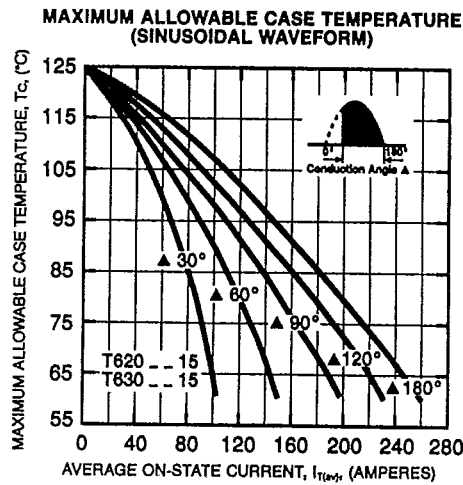
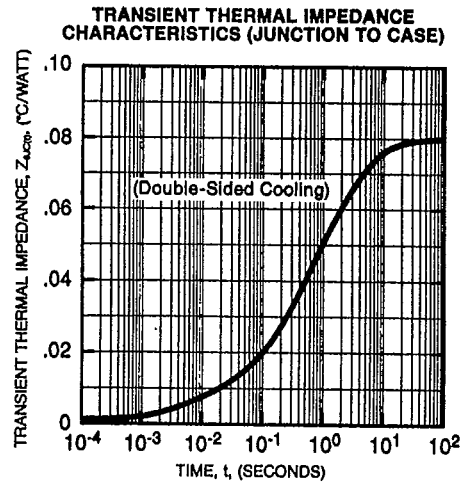
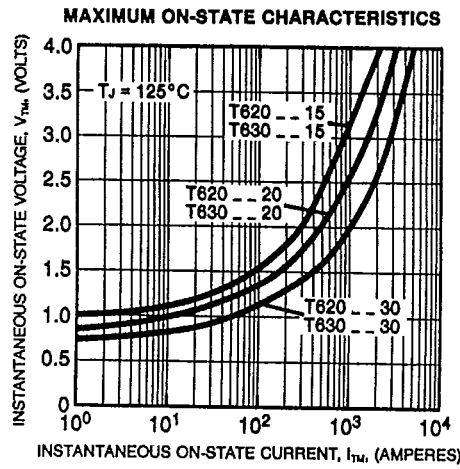
ⓔ Higher  $dv/dt$  ratings available, consult factory.

ⓕ Per JEDEC standard RS-397, 5.2.2.6.



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**T620/T630**  
**Phase Control SCR**  
 150-300 Amperes Avg/100-1600 Volts





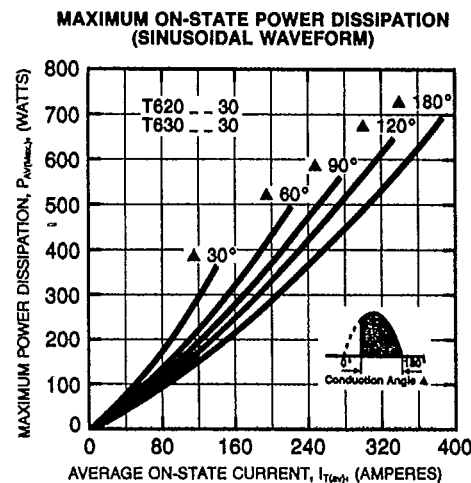
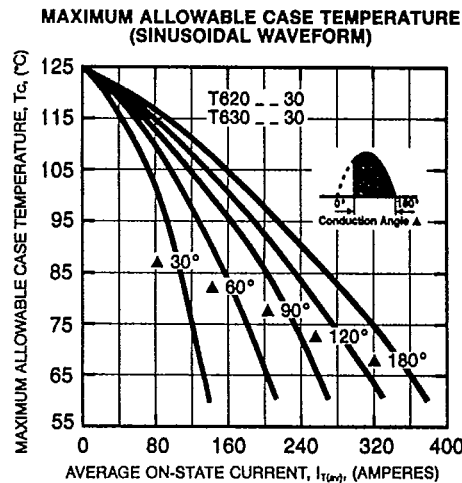
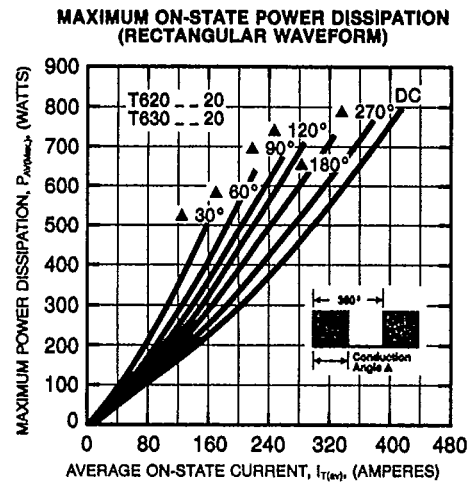
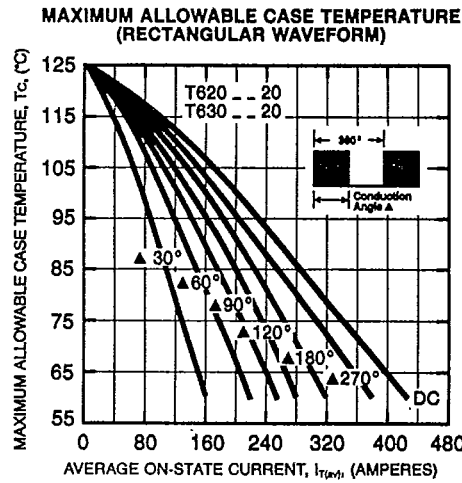
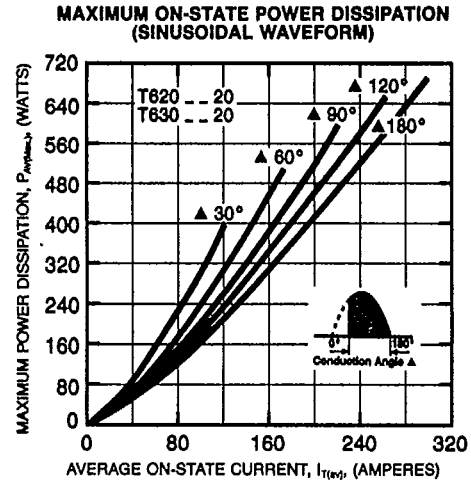
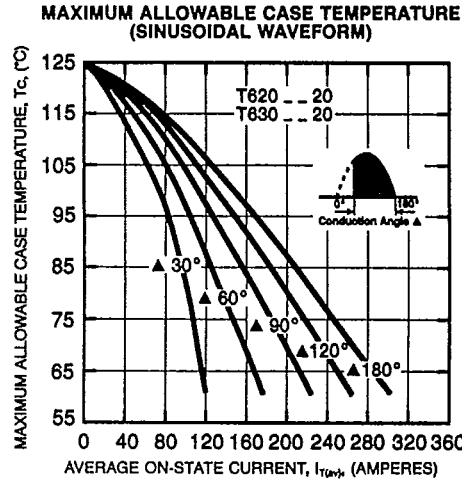
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**Phase Control SCR**

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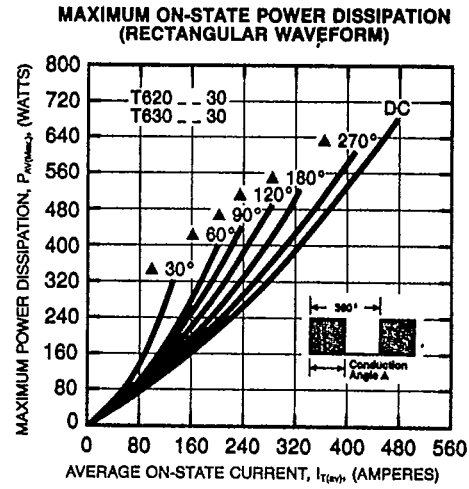
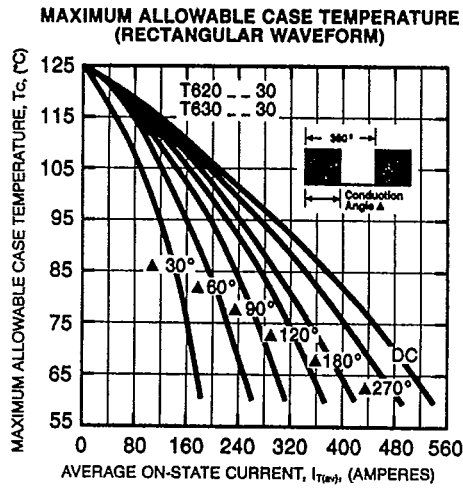
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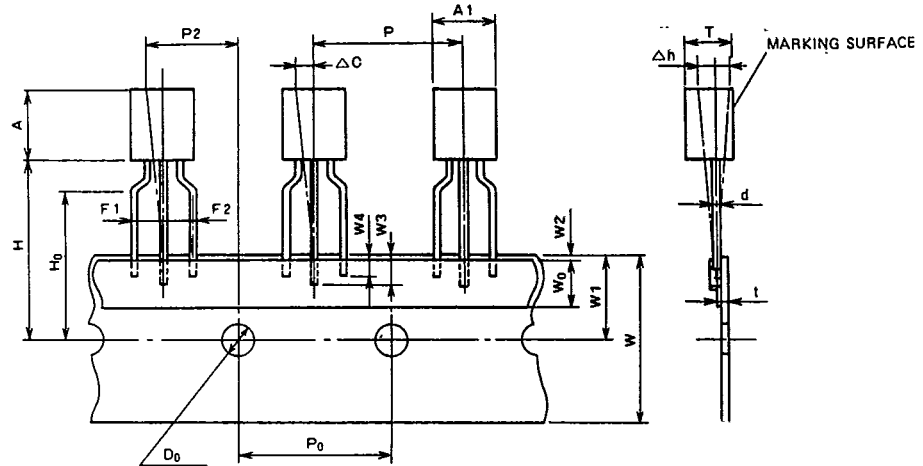
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## Taping

### STANDARD SPECIFICATIONS FOR TAPING OF MOLDED PACKAGE THYRISTORS AND TRIACS

#### TO-92 Package

Thyristor  
CR02AM, CR03AM, CR04AM  
Triac  
BCR1AM



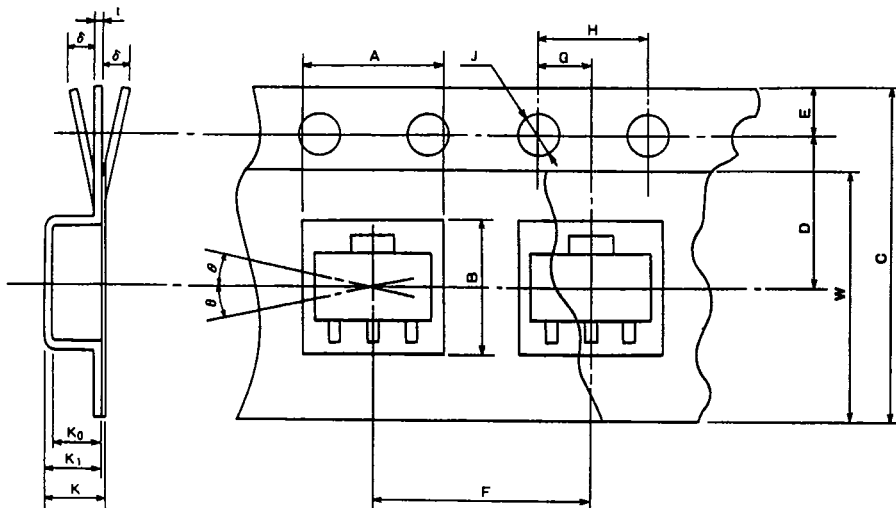
Taping dimensions

Description of symbol	Symbol	Dimensions (Unit:mm)	Remark
Product width	A1	5.0 MAX	
Product height	A	5.0 MAX	
Product thickness	T	3.7 MAX	
Lead wire diameter	d	0.6 MAX	
Sticker lead wire length (1)	W3	2.5 MIN	
Sticker lead wire length (2)	W4	2.0 MIN	
Pitch between products	P	12.7 ± 1.0	
Feed hole pitch	P <sub>0</sub>	12.7 ± 0.3	The cumulative pitch error is ± 1mm per 20 pitches.
Feed hole deviation (1)	P2	6.35 ± 1.3	
Distance between lead wires	F1, F2	2.5 ± 0.4	
Defective product (1)	Δh	0 ± 2.0	
Tape width	W	18.0 ± <sup>1.0</sup> / <sub>0.5</sub>	
Sticker tape width	W <sub>0</sub>	6.0 ± 0.5	
Feed hole deviation (2)	W1	9.0 ± 0.5	
Sticker tape deviation	W2	0.5 MAX	
Position of product bottom surface	H	17.5 MIN	
Lynch height of lead wire	H <sub>0</sub>	16.0 ± 0.5	
Feed hole diameter	D <sub>0</sub>	4.0 ± 0.2	
Tape thickness	t	0.7 ± 0.2	
Defective product (2)	ΔC	0 ± 1.0	



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Powerex Semiconductor Data Book  
 Taping



SOT-89 Package

Thyristor  
 CR08AS

Taping dimensions

Description of symbol		Symbol	Dimensions/angles Unit:mm	Remark
Parts Insertion	Height	A	$5.0 \pm 0.1$	Cross-section of the surface 0.5mm above the Inner bottom
	Width	B	$4.6 \pm 0.1$	Cross-section of the surface 0.5mm above the inner bottom
Concave square hole	Depth	$K_0$	$1.8 \pm 0.1$	Inner space
	Pitch	F	$8.0 \pm 0.1$	Cumulative error +0.1/-0.3 MAX/10 pitches
Round feed hole	Diameter	J	$\phi 1.5 \pm 0.05$	
	Pitch	H	$4.0 \pm 0.1$	Cumulative error +0.1/-0.3 MAX/10 pitches
	Position	E	$1.5 \pm 0.1$	Distance between the tape edge and the hole center
Distance between center lines	Vertical	G	$2.0 \pm 0.5$	Center line of concave square hole and round feed hole
	Horizontal	D	$5.65 \pm 0.05$	Center line of concave square hole and round feed hole
Cover tape	Width	W	$9.5 + 0.3/-0$	Thickness: 0.1 MAX
Carrier tape	Width	C	$12 \pm 0.2$	Warp $\pm 0.3$ MAX
	Thickness	t	$0.3 \pm 0.05$	
	Package hole depth	$K_1$	$2.1 \pm 0.1$	
Device	Package dimensions	—	—	As shown in (e)
	Inclination	$\theta$	30° MAX.	
Total Thickness		K	$2.3 \pm 0.1$	Total thickness including cover and carrier tapes