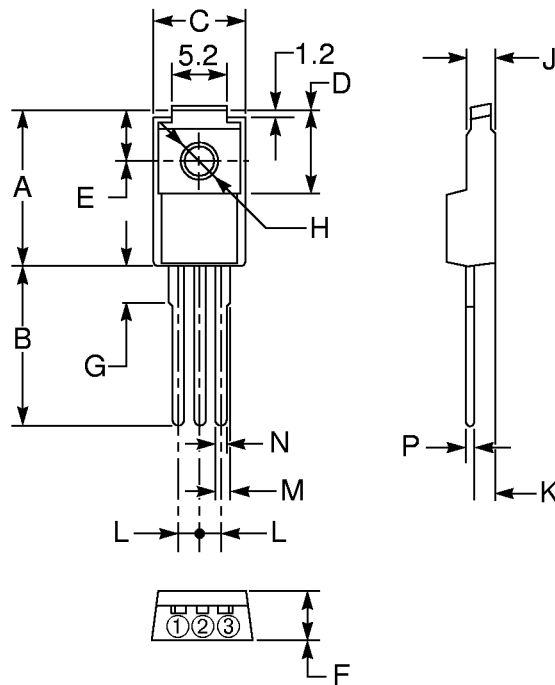


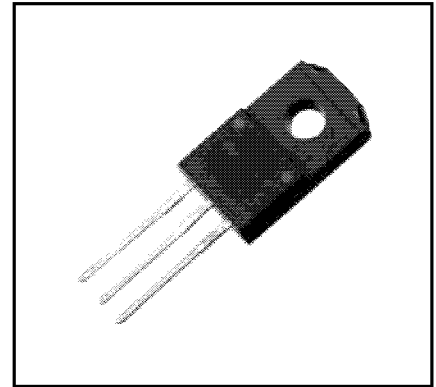
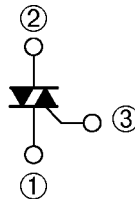
### Triac 8 Amperes/400-600 Volts

#### OUTLINE DRAWING



#### CONNECTION DIAGRAM

- ① T1 TERMINAL
- ② T2 TERMINAL
- ③ GATE TERMINAL



#### Description:

A triac is a solid state silicon AC switch which may be gate triggered from an off-state to an on-state for either polarity of applied voltage.

#### Features:

- Full Molded Isolation Package
- Glass Passivation
- Selected for Inductive Loads
- UL Approved

#### Applications:

- AC Switch
- Motor Controls
- Lighting

#### Ordering Information:

Example: Select the complete seven, eight or nine digit part number you desire from the table - i.e. BCR8PM-8 is a 400 Volt, 8 Ampere Triac.

Outline Drawing (Conforms to TO-220F)

Dimensions	Inches	Millimeters
A	0.67	17.0
B	0.49 Min.	12.5 Min.
C	0.39	10.0
D	0.33	8.5
E	0.20	5.0
F	0.18	4.5
G	0.14	3.6

Dimensions	Inches	Millimeters
H	0.126 ±0.008 Dia.	3.2 ±0.2 Dia.
J	0.11	2.8
K	0.102	2.6
L	0.10	2.5
M	0.039	1.0
N	0.031	0.8
P	0.020	0.5

Type	V <sub>DRM</sub> Volts	Code	Inductive Load*
BCR8PM	400 600	-8 -12	L

\*For inductive load, add L.



Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272

**BCR8PM**

Triac

8 Amperes/400-600 Volts

**Absolute Maximum Ratings,  $T_a = 25\text{ }^\circ\text{C}$  unless otherwise specified**

Ratings	Symbol	BCR8PM-8	BCR8PM-12	Units
Repetitive Peak Off-state Voltage	$V_{DRM}$	400	600	Volts
Non-repetitive Peak Off-state Voltage	$V_{DSM}$	500	720	Volts
On-state Current, $T_c = 88\text{ }^\circ\text{C}$	$I_T(\text{RMS})$	8	8	Amperes
Non-repetitive Peak Surge, One Cycle (60 Hz)	$I_{TSM}$	80	80	Amperes
$I^2t$ for Fusing, $t = 8.3\text{ msec}$	$I^2t$	26	26	$\text{A}^2\text{sec}$
Peak Gate Power Dissipation, 20 $\mu\text{sec}$	$P_{GM}$	5	5	Watts
Average Gate Power Dissipation	$P_{G(\text{avg})}$	0.5	0.5	Watts
Peak Gate Current	$I_{GM}$	2	2	Amperes
Peak Gate Voltage	$V_{GM}$	10	10	Volts
Storage Temperature	$T_{stg}$	-40 to 125	-40 to 125	$^\circ\text{C}$
Operating Temperature	$T_j$	-40 to 125	-40 to 125	$^\circ\text{C}$
Isolation Voltage	$V_{iso}$	1500	1500	Volts
Weight	—	2	2	Grams



Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272

**BCR8PM**

**Triac**

8 Amperes/400-600 Volts

**Electrical and Thermal Characteristics,  $T_j = 25^\circ\text{C}$  unless otherwise specified**

Characteristics	Symbol	Test Conditions (Trigger Mode)				BCR8PM			Units
		$V_D$	$R_L$	$R_G$	$T_j$	Min.	Typ.	Max.	
Gate Parameters									
DC Gate Trigger Current									
MT2+ Gate+	I <sub>GT</sub>	6V	6 $\Omega$	330 $\Omega$	25 $^\circ\text{C}$	–	–	30	mA
MT2+ Gate–		6V	6 $\Omega$	330 $\Omega$	25 $^\circ\text{C}$	–	–	30	mA
MT2– Gate–		6V	6 $\Omega$	330 $\Omega$	25 $^\circ\text{C}$	–	–	30	mA
DC Gate Trigger Voltage									
MT2+ Gate+	V <sub>GT</sub>	6V	6 $\Omega$	330 $\Omega$	25 $^\circ\text{C}$	–	–	1.5	Volts
MT2+ Gate–		6V	6 $\Omega$	330 $\Omega$	25 $^\circ\text{C}$	–	–	1.5	Volts
MT2– Gate–		6V	6 $\Omega$	330 $\Omega$	25 $^\circ\text{C}$	–	–	1.5	Volts
DC Gate Non-trigger Voltage									
All	V <sub>GD</sub>	1/2 V <sub>DRM</sub>	–	–	125 $^\circ\text{C}$	0.2	–	–	Volts

**BCR8PM**

**Triac**

8 Amperes/400-600 Volts

**Electrical and Thermal Characteristics,  $T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified**

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction-to-case	$R_{th(j-c)}$	–	–	–	3.7	$^\circ\text{C/W}$
Voltage – Blocking State Repetitive Off-state Current	$I_{DRM}$	Gate Open Circuited, $V_D = V_{DRM}$ , $T_j = 125\text{ }^\circ\text{C}$	–	–	2	mA
Current – Conducting State Peak On-state Voltage	$V_{TM}$	$T_c = 25\text{ }^\circ\text{C}$ $I_{TM} = 12\text{A}$	–	–	1.6	Volts
Critical Rate-of-rise of Commutating Off-state Voltage (Commutating $dv/dt$ )	$(dv/dt)_c$	–	–	–	–	$\text{V}/\mu\text{s}$

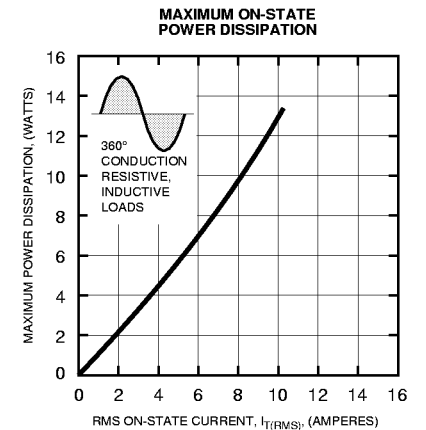
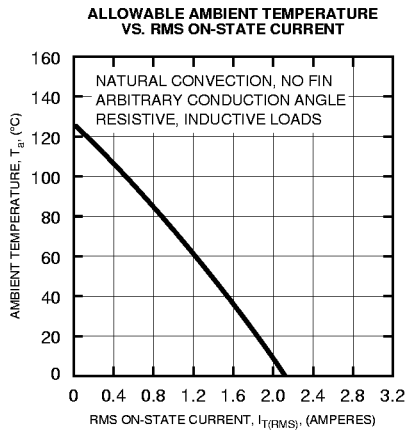
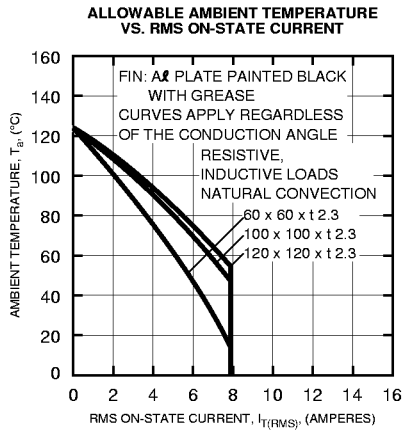
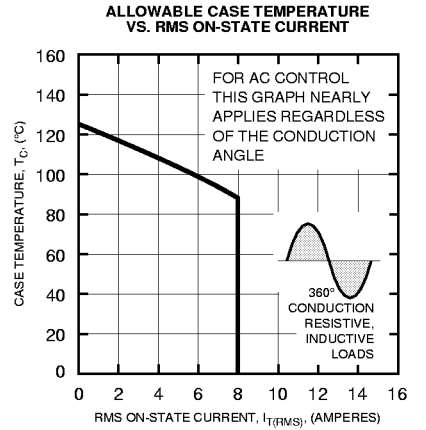
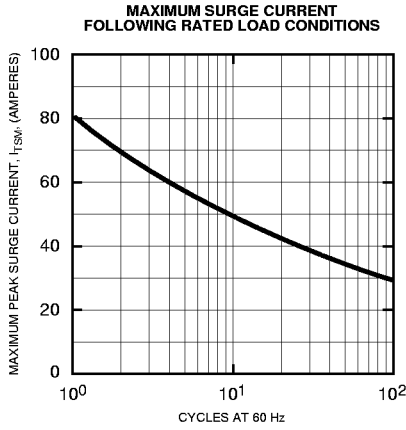
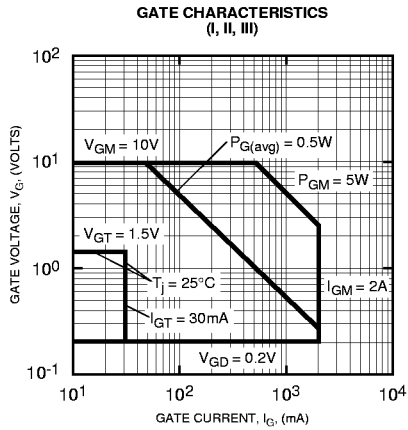
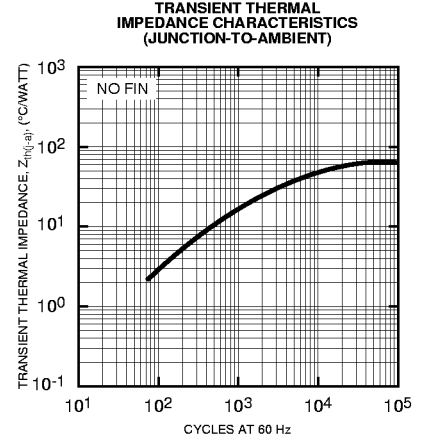
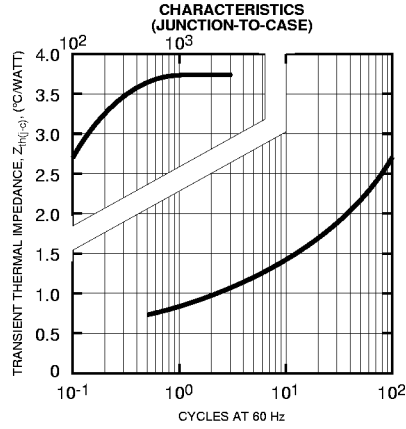
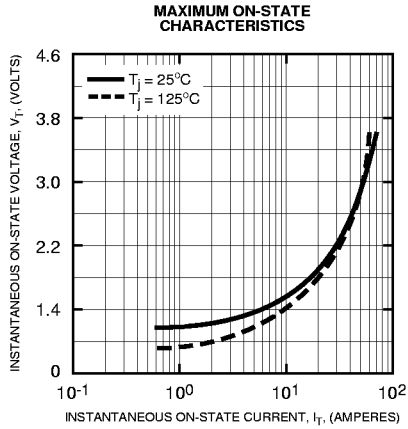
▲ for inductive load (L)  
(Switching)

$\Delta$ Part Number	$V_{DRM}$ (Volts)	Commutating $dv/dt$ , $(dv/dt)_c$ ( $\text{V}/\mu\text{sec}$ )		Test Condition	Commutating Voltage & Current Waveform (Inductive Load)
		Load Type	Minimum		
BCR8PM-8L	400	L	10	$T_j = 125\text{ }^\circ\text{C}$ ,	
BCR8PM-12L	600	L	10	Rate of Decay On-state Commutating Current $(di/dt)_c = -4\text{A/msec}$ ; Peak Off-state Voltage $V_D = 400\text{V}$	



Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272

**BCR8PM**  
**Triac**  
 8 Amperes/400-600 Volts

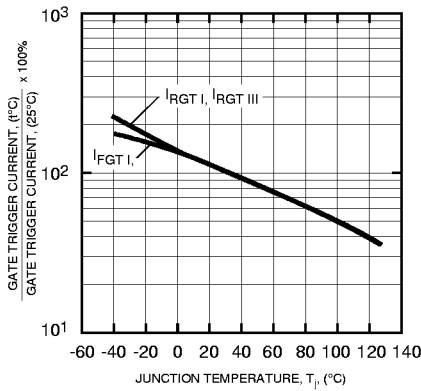


## BCR8PM

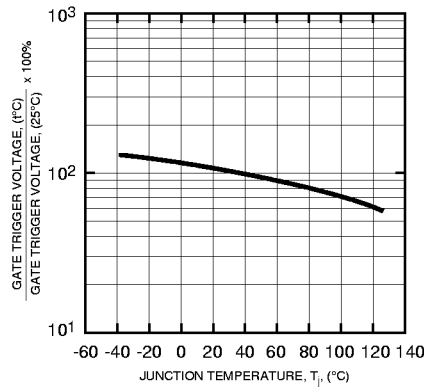
### Triac

8 Amperes/400-600 Volts

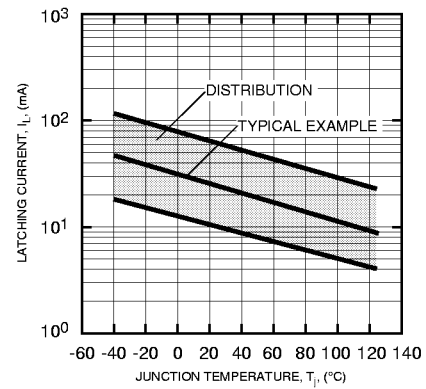
**GATE TRIGGER CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)**



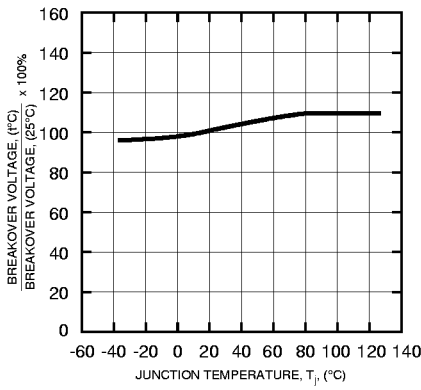
**GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE (TYPICAL)**



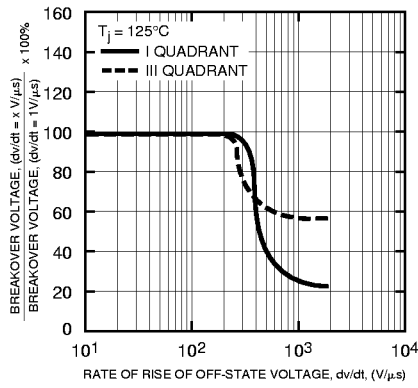
**LATCHING CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)**



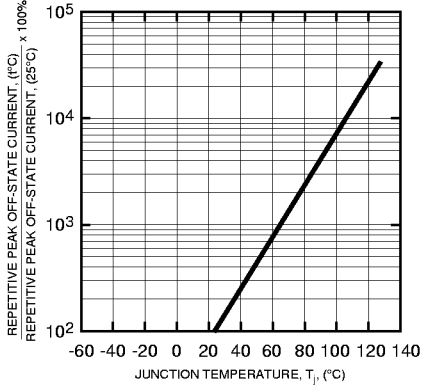
**BREAKOVER VOLTAGE VS. JUNCTION TEMPERATURE (TYPICAL)**



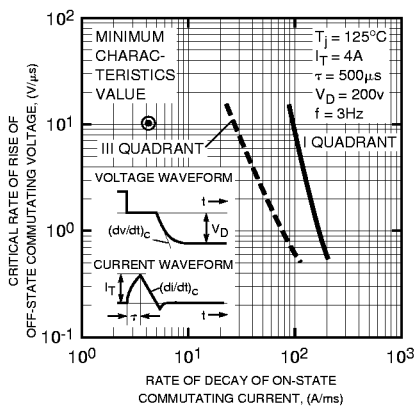
**BREAKOVER VOLTAGE VS. RATE OF RISE OF OFF-STATE VOLTAGE (TYPICAL)**



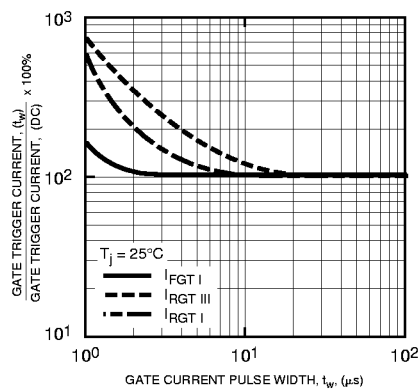
**REPETITIVE PEAK OFF-STATE CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)**



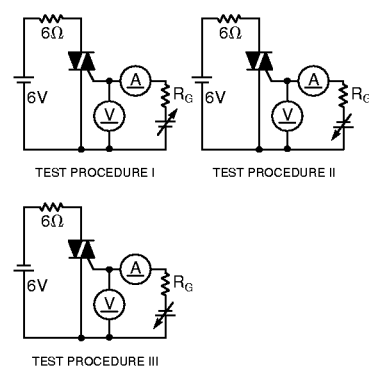
**COMMUTATION CHARACTERISTICS (TYPICAL)**



**GATE TRIGGER CURRENT VS. GATE CURRENT PULSE WIDTH (TYPICAL)**



**GATE TRIGGER CHARACTERISTICS TEST CIRCUITS**





T-91-01

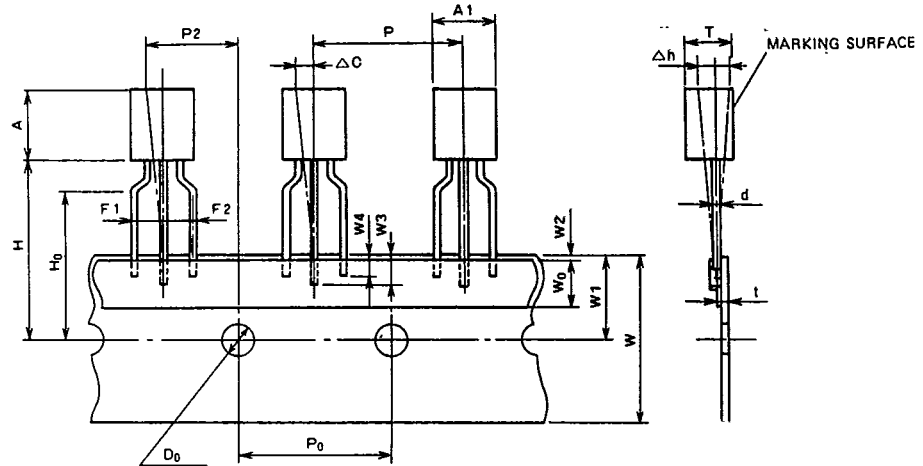
Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272  
 Powerex Europe, S.A., 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

## Taping

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

#### TO-92 Package

Thyristor  
CR02AM, CR03AM, CR04AM  
Triac  
BCR1AM



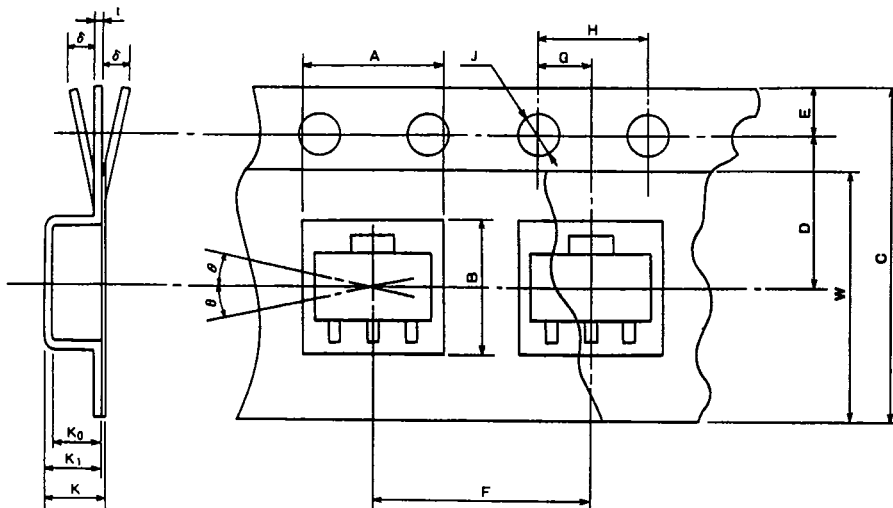
Taping dimensions

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	



Powerex, Inc., Hills Street, Youngwood, Pennsylvania 15697 (412) 925-7272  
 Powerex Europe, S.A., 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

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