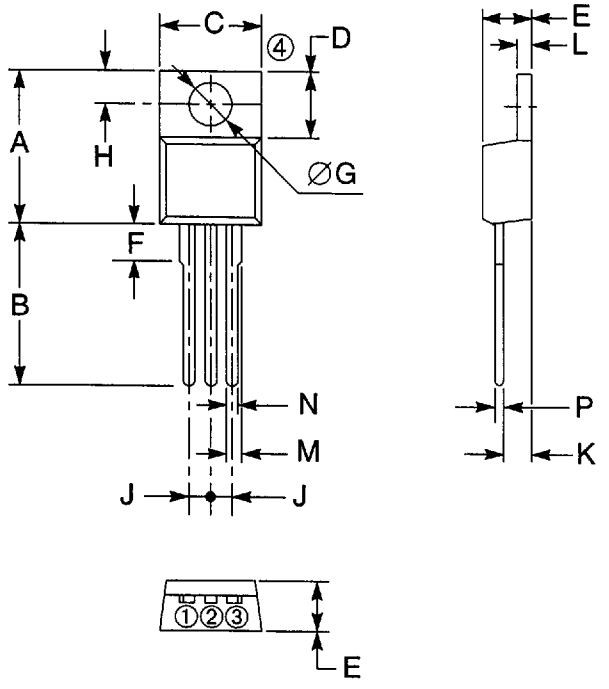
Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272

BCR20AM

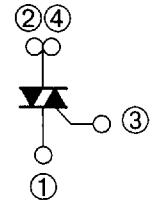
Triac
20 Ampere/400-600 Volts

OUTLINE DRAWING



CONNECTION DIAGRAM

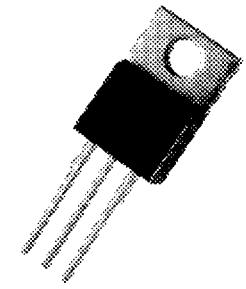
① T1 TERMINAL
② T2 TERMINAL
③ GATE
④ T2 TERMINAL



Outline Drawing (Conforms to TO-220)

Dimensions	Inches	Millimeters
A	0.63 Max.	16.0 Max.
B	0.49 Max.	12.5 Max.
C	0.41 Max.	10.5 Max.
D	0.28	7.0
E	0.18	4.5
F	0.15 Max.	3.8 Max.
G	0.142 ± 0.008 Dia.	3.6 ± 0.2 Dia.

Dimensions	Inches	Millimeters
H	0.125 ± 0.008	3.2 ± 0.2
J	0.99	2.54
K	0.10	2.6
L	0.051	1.3
M	0.051	1.3
N	0.031	0.8
P	0.020	0.5



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:
- ☐ Planar Passivation
- ☐ Selected for Inductive Loads

Applications:
- ☐ AC Switch
- ☐ Heating
- ☐ Motor Controls
- ☐ Switch Mode Power Supply
- ☐ Lighting
- ☐ Solid State Relay

Ordering Information:
Example: Select the complete eight, nine or ten digit part number you desire from the table - i.e. BCR20AM-8 is a 400 Volt, 20 Ampere Triac

Type	V_{DRM} Volts	Code	Inductive Load*
BCR20AM	400	-8	L
	600	-12	

*For inductive load, add L.

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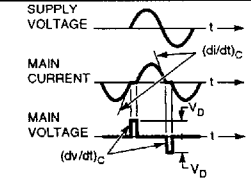
BCR20AM
Triac
20 Ampere/400-600 Volts

Absolute Maximum Ratings, T_a = 25 °C unless otherwise specified

Ratings	Symbol	BCR20AM-8	BCR20AM-12	Units
On-state Current, T_c = 105°C	$I_{T(RMS)}$	20	20	Amperes
Repetitive Peak Off-state Voltage (Gate Open)	V_{DRM}	400	600	Volts
Non-repetitive Peak Off-state Voltage (Gate Open)	V_{DSM}	500	720	Volts
Non-repetitive Peak On-state Voltage, One Cycle (60 Hz)	I_{TSM}	200	200	Amperes
I^2t for Fusing, t = 8.3 msec	I^2t	167	167	A^2sec
Peak Gate Power Dissipation, 20 μsec	P_{GM}	5	5	Watts
Average Gate Power Dissipation	$P_{G(avg)}$	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	°C
Operating Temperature	T_j	-40 to 125	-40 to 125	°C
Weight	–	2.0	2.0	Grams

Electrical and Thermal Characteristics, T_j = 25 °C unless otherwise specified

		Test Conditions (Trigger Mode)				BCR30GM			
Characteristics	Symbol	V_D	R_L	R_G	T_j	Min.	Typ.	Max.	Units
Gate Parameters DC Gate Trigger Current									
MT2+ Gate+	I_{FGT} I	6V	6Ω	330Ω	25°C	–	–	30	mA
MT2+ Gate–	I_{RGT} I	6V	6Ω	330Ω	25°C	–	–	30	mA
MT2– Gate–	I_{RGT} III	6V	6Ω	330Ω	25°C	–	–	30	mA
DC Gate Trigger Voltage									
MT2+ Gate+	V_{FGT} I	6V	6Ω	330Ω	25°C	–	–	1.5	Volts
MT2+ Gate–	V_{RGT} I	6V	6Ω	330Ω	25°C	–	–	1.5	Volts
MT2– Gate–	V_{RGT} III	6V	6Ω	330Ω	25°C	–	–	1.5	Volts
DC Gate Non-trigger Voltage									
All	V_{GD}	1/2 V_{DRM}	–	–	125°C	0.2	–	–	Volts
Thermal Resistance, Junction-to-case	$R_{th(j-c)}$	–				–	–	0.8	°C/W
Voltage – Blocking State Repetitive Off-state Current	I_{DRM}	Gate Open Circuited, $V_D = V_{DRM}$, T_j = 125°C				–	–	2	mA
Current – Conducting State Peak On-state Voltage	V_{TM}	T_c = 25°C, I_{TM} = 30A				–	–	1.5	Volts
Critical Rate-of-Rise of Commutating Off-state Voltage (Commutating dv/dt) ▲ (Switching)	$(dv/dt)_c$	–				–	–	–	V/μs

Δ Part Number	V_{DRM} (Volts)	Commutating dv/dt, $(dv/dt)_c$ (V/μsec) Minimum	Test Condition	Commutating Voltage & Current Waveform (Inductive Load)
BCR20AM-8	400	—	Tj = 125°C, Rate of Decay	
BCR20AM-8L		10	On-state Commutating Current	
BCR20AM-12	600	—	$(dv/dt)_c$ = -10A/msec,	
BCR20AM-12L		10	Peak Off-state Voltage V_D = 400V	

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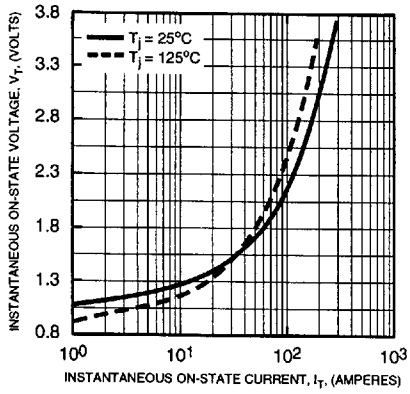
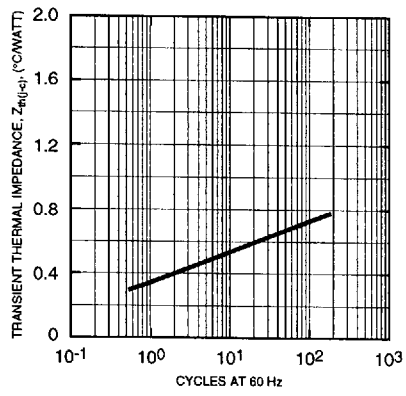
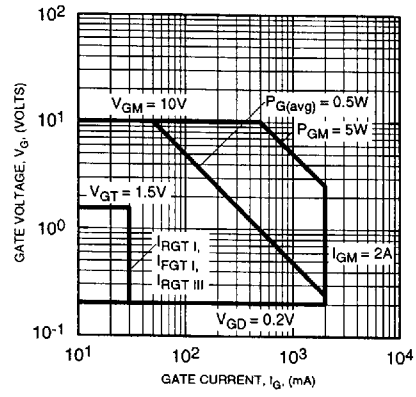
MAXIMUM ON-STATE CHARACTERISTICS



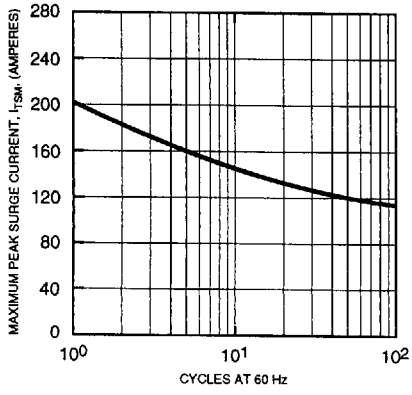
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION-TO-CASE)



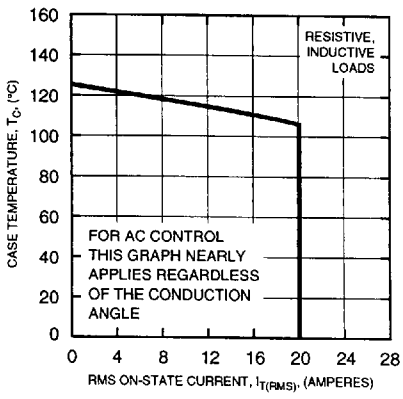
GATE CHARACTERISTICS (I, II, III)



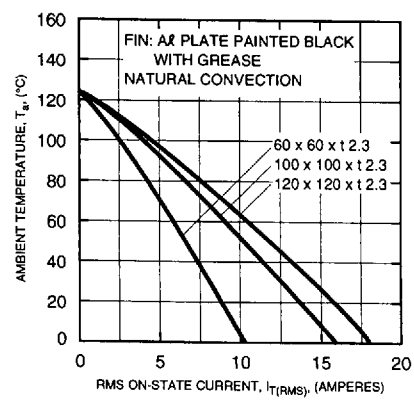
MAXIMUM SURGE CURRENT FOLLOWING RATED LOAD CONDITIONS



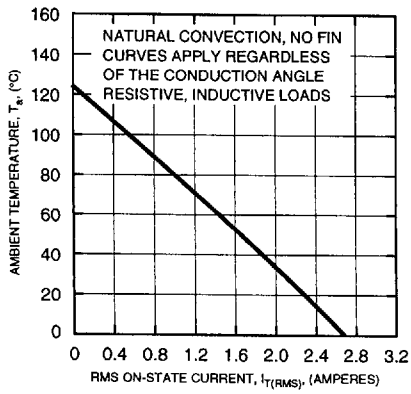
ALLOWABLE CASE TEMPERATURE VS. RMS ON-STATE CURRENT



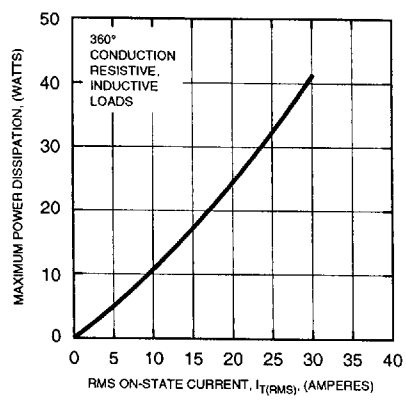
ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT



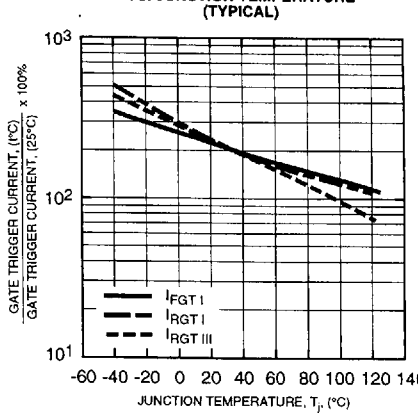
ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT



MAXIMUM ON-STATE POWER DISSIPATION



GATE TRIGGER CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)



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BCR20AM
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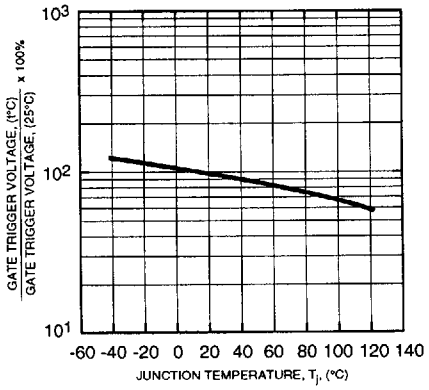
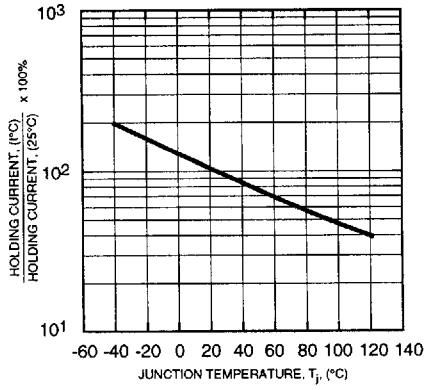
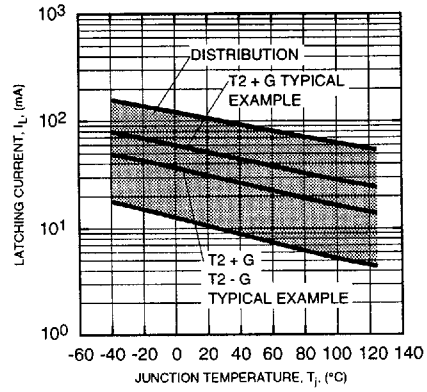
GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE (TYPICAL)



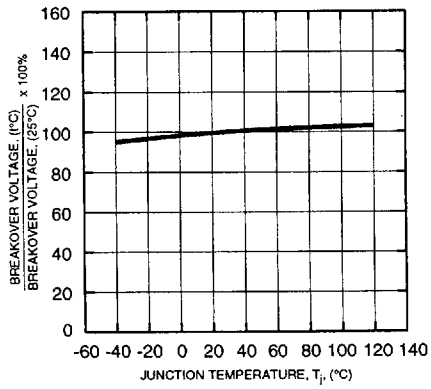
HOLDING CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)



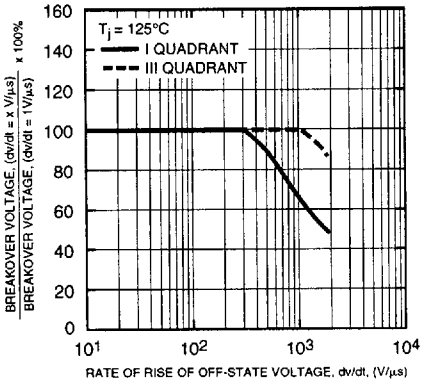
LATCHING CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)



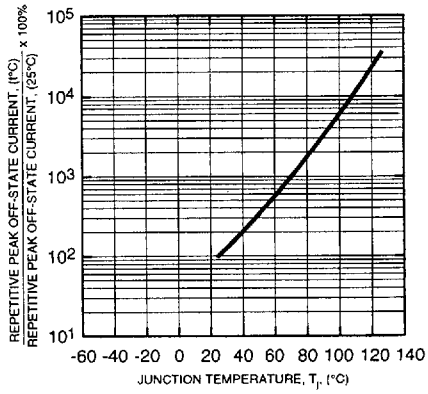
BREAKOVER VOLTAGE VS. JUNCTION TEMPERATURE (TYPICAL)



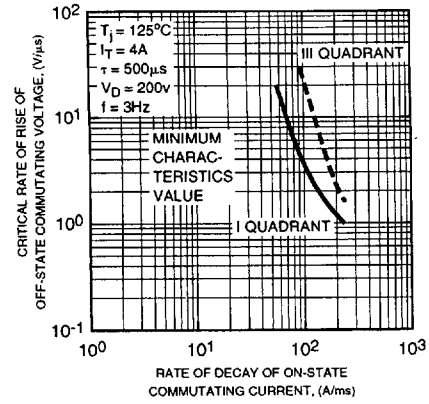
BREAKOVER VOLTAGE VS. RATE OF RISE OF OFF-STATE VOLTAGE (TYPICAL)



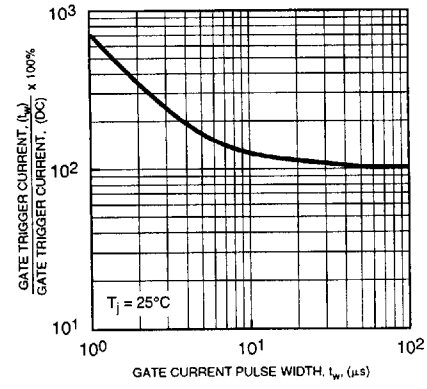
REPETITIVE PEAK OFF-STATE CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)



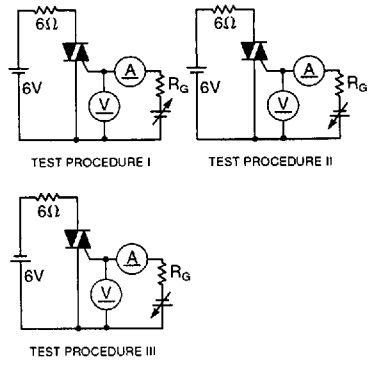
COMMUTATION CHARACTERISTICS (TYPICAL)



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



GATE TRIGGER CHARACTERISTICS TEST CIRCUITS



POWEREX

T-91-01

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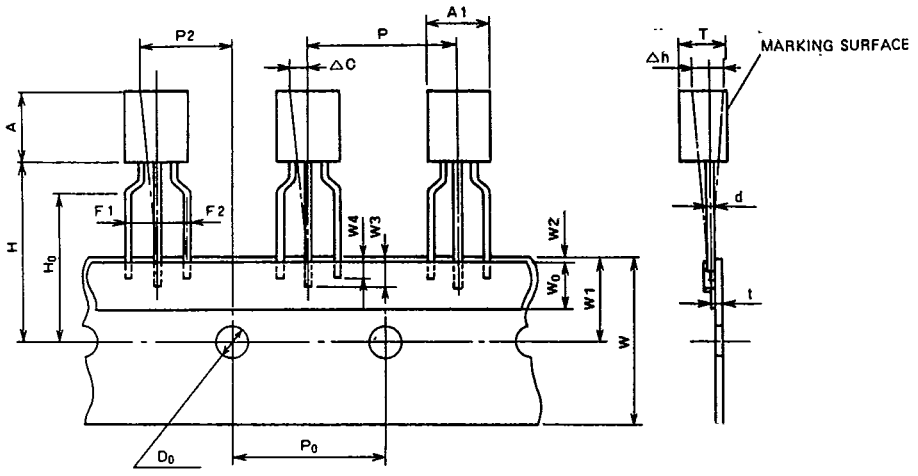
Powerex Europe, S.A., 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

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_0	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	$18.0 \pm^{1.0}_{0.5}$	
Sticker tape width	W_0	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_0	16.0 ± 0.5	
Feed hole diameter	D_0	4.0 ± 0.2	
Tape thickness	t	0.7 ± 0.2	
Defective product (2)	ΔC	0 ± 1.0	

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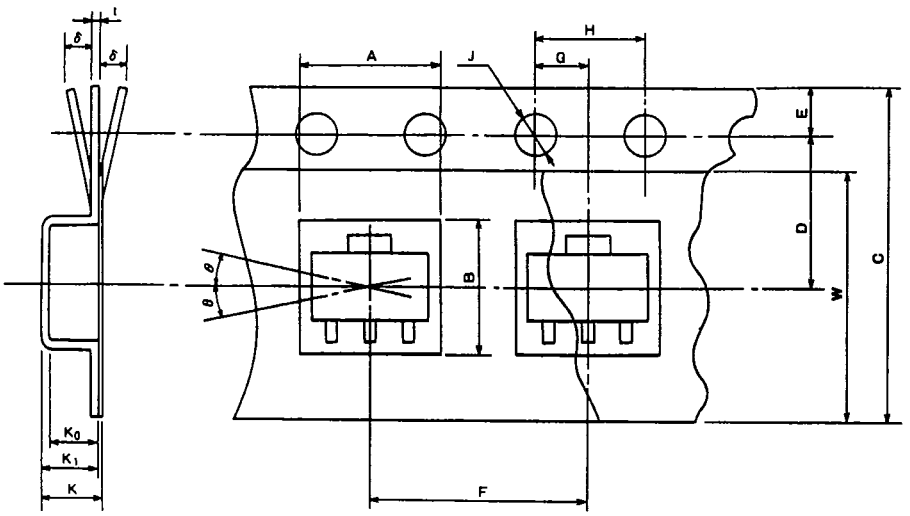
Powerex Semiconductor Data Book
Taping



SOT-89 Package

Thyristor
CR08AS

Taping dimensions

Description of symbol		Symbol	Dimensions/angles Unit:mm	Remark
Parts insertion Concave square hole	Height	A	$5.0 \pm^{0.1}_{0.1}$	Cross-section of the surface 0.5mm above the inner bottom
	Width	B	$4.6 \pm^{0.1}_{0.1}$	Cross-section of the surface 0.5mm above the inner bottom
	Depth	K_0	1.8 ± 0.1	Inner space
	Pitch	F	8.0 ± 0.1	Cumulative error +0.1/–0.3 MAX/10 pitches
Round feed hole	Diameter	J	$\phi 1.5 \pm^{0.1}_{0.05}$	
	Pitch	H	4.0 ± 0.1	Cumulative error +0.1/–0.3 MAX/10 pitches
	Position	E	1.5 ± 0.1	Distance between the tape edge and the hole center
Distance between center lines	Vertical	G	2.0 ± 0.5	Center line of concave square hole and round feed hole
	Horizontal	D	5.65 ± 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 ± 0.2	Warp δ0.3 MAX
	Thickness	t	0.3 ± 0.05	
	Package hole depth	K_1	2.1 ± 0.1	
Device	Package dimensions	—	—	As shown in (e)
	Inclination	θ	30° MAX.	
Total Thickness		K	2.3 ± 0.1	Total thickness including cover and carrier tapes