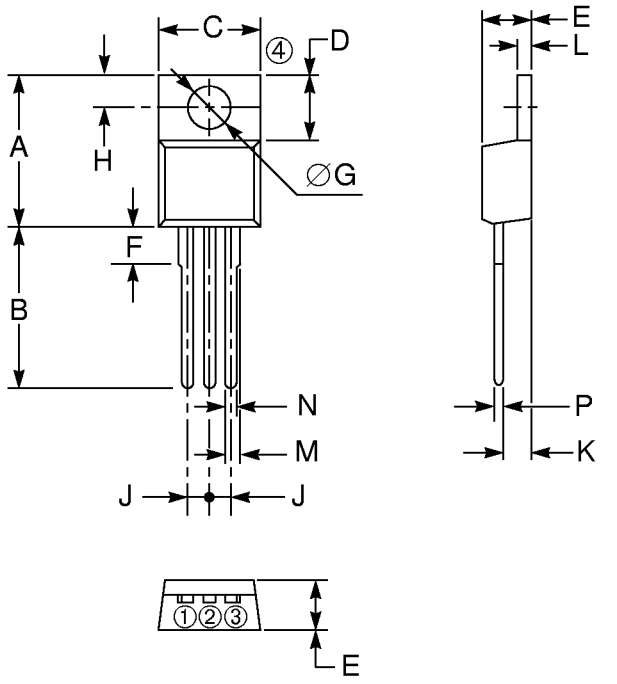
Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272

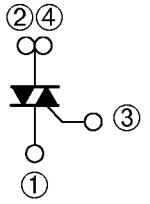
Triac
8 Amperes/400-600 Volts

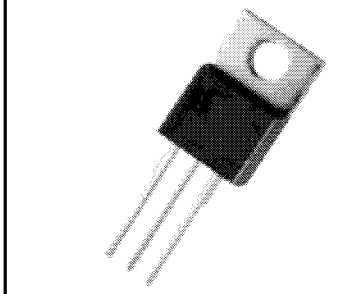
OUTLINE DRAWING



CONNECTION DIAGRAM

① T1 TERMINAL
② T2 TERMINAL
③ GATE
④ T2 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:
- ☐ Glass Passivation
- ☐ Selected for Inductive Loads

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

Ordering Information:
Example: Select the complete seven, eight or nine digit part number you desire from the table - i.e. BCR8CM-8 is a 400 Volt, 8 Ampere Triac

Type	V_{DRM} Volts	Code	Inductive Load*
BCR8CM	400	-8	L
	600	-12	

*For inductive load, add L.

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.
H	0.125 ± 0.008	3.2 ± 0.2

Dimensions	Inches	Millimeters
J	0.99	2.54
K	0.10	2.6
L	0.051	1.3 Min.
M	0.051	1.3
N	0.039	1.0
P	0.031	0.8
Q	0.020	0.5

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BCR8CM
Triac
8 Amperes/400-600 Volts

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

Ratingss	Symbol	BCR8CM-8	BCR8CM-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 = 105°C	$I_{T(RMS)}$	8	8	Amperes
Non-repetitive Peak Surge, One Cycle (60 Hz)	I_{TSM}	80	80	Amperes
I^2t for Fusing, t = 8.3 msec	I^2t	26	26	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	–	2.3	2.3	Grams

①At the case reference point (see outline drawing) temperature of 105°C maximum and 360° conduction.

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BCR8CM
Triac
8 Amperes/400-600 Volts

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

Characteristics	Symbol	Test Conditions (Trigger Mode) V_D	R_L	R_G	T_j	BCR8CM Min.	Typ.	Max.	Units
Gate Parameters									
DC Gate Trigger Current									
MT2+ Gate+	I_{GT}	6V	6Ω	330Ω	25°C	–	–	30	mA
MT2+ Gate–		6V	6Ω	330Ω	25°C	–	–	30	mA
MT2– Gate–		6V	6Ω	330Ω	25°C	–	–	30	mA
DC Gate Trigger Voltage									
MT2+ Gate+	V_{GT}	6V	6Ω	330Ω	25°C	–	–	1.5	Volts
MT2+ Gate–		6V	6Ω	330Ω	25°C	–	–	1.5	Volts
MT2– Gate–		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

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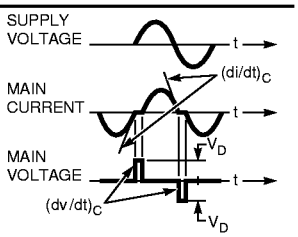
Electrical and Thermal Characteristics, T_j = 25 °C unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance, Junction-to-case	$R_{th(j-c)}$	–	–	–	2	°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, Instantaneous I_{TM} = 12A	–	–	1.5	Volts
Critical Rate-of-rise of Commutating Off-state Voltage (Commutating dv/dt) ▲ for inductive load (L) (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)
BCR8CM-8L	400	10	T_j = 125°C, Rate of Decay On-state Commutating Current $(di/dt)_c$ = -4A/msec: Peak Off-state Voltage V_D = 400V	
BCR8CM-12L	600	10		

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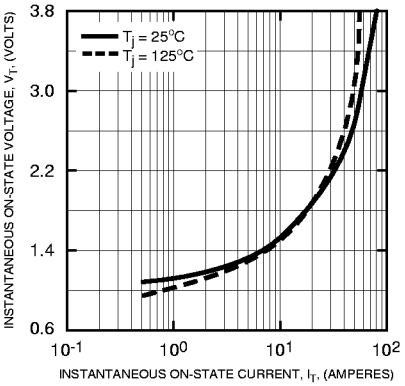
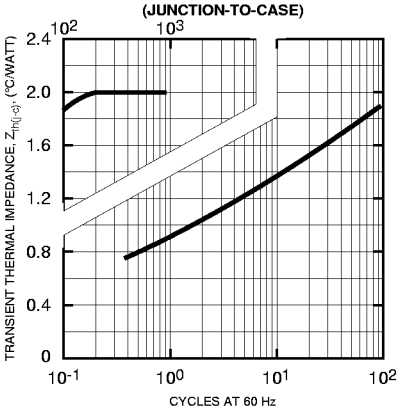
8 Amperes/400-600 Volts

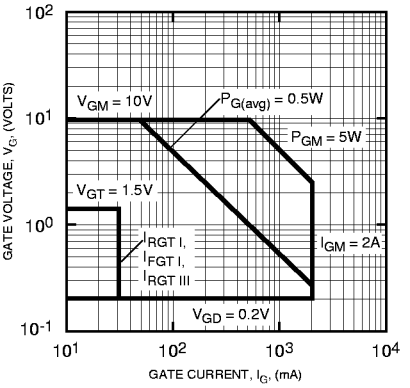
MAXIMUM ON-STATE CHARACTERISTICS



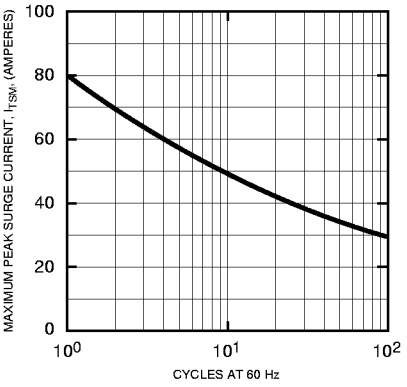
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION-TO-CASE)



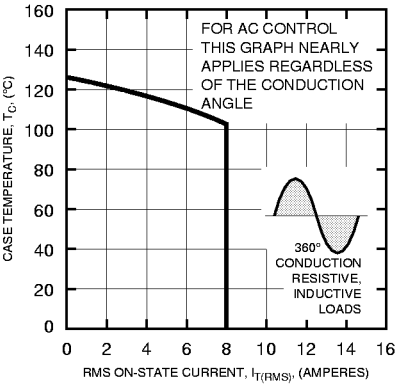
GATE CHARACTERISTICS (I, II, III)



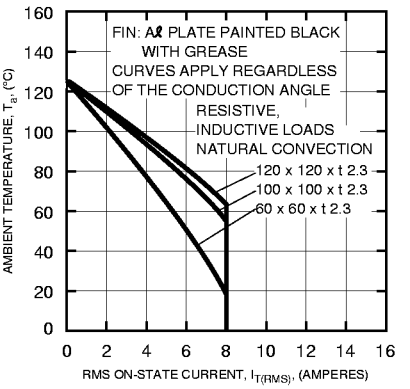
MAXIMUM SURGE CURRENT FOLLOWING RATED LOAD CONDITIONS



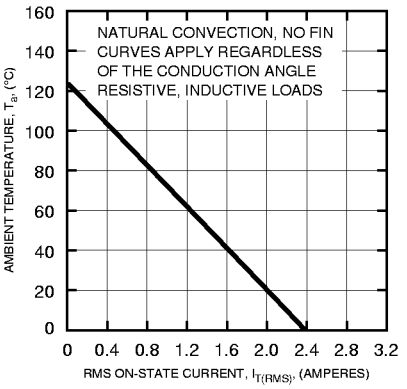
ALLOWABLE CASE TEMPERATURE VS. RMS ON-STATE CURRENT



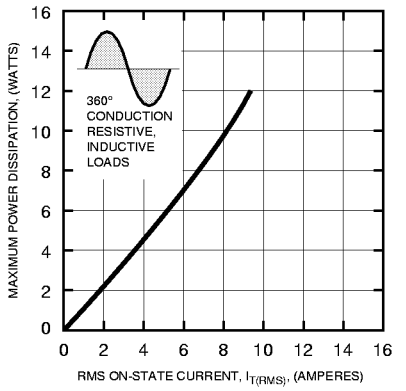
ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT



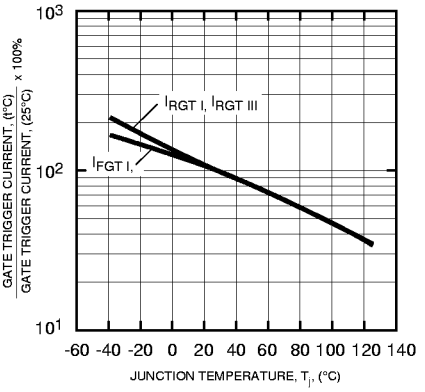
ALLOWABLE AMBIENT TEMPERATURE VS. RMS ON-STATE CURRENT



MAXIMUM ON-STATE POWER DISSIPATION



GATE TRIGGER CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)



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BCR8CM
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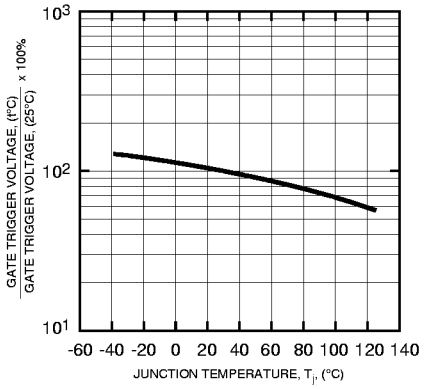
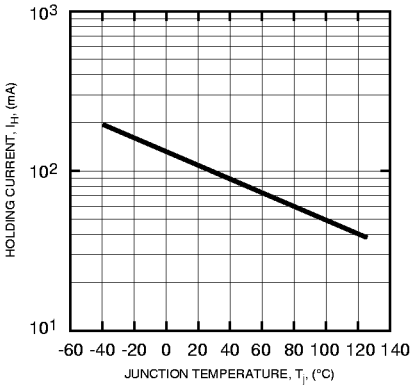
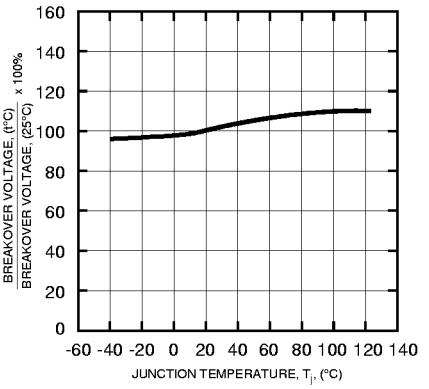
GATE TRIGGER VOLTAGE VS. JUNCTION TEMPERATURE (TYPICAL)



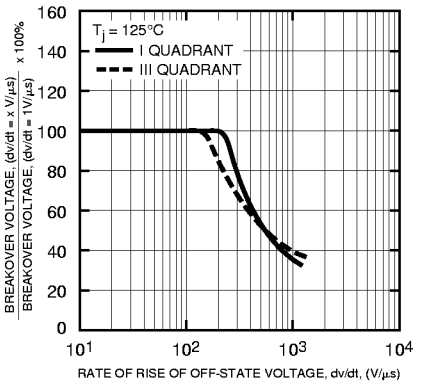
HOLDING CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)



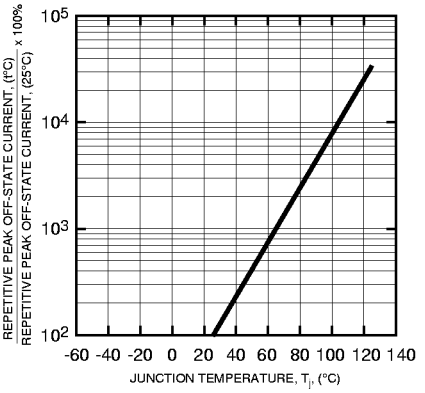
BREAKOVER VOLTAGE VS. JUNCTION TEMPERATURE (TYPICAL)



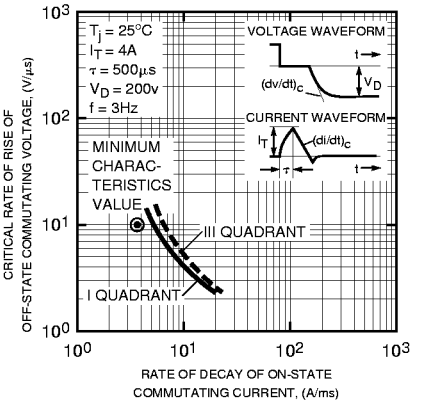
BREAKOVER VOLTAGE VS. RATE OF RISE OF OFF-STATE VOLTAGE (TYPICAL)



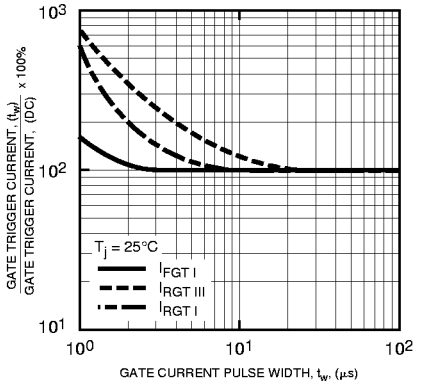
REPETITIVE PEAK OFF-STATE CURRENT VS. JUNCTION TEMPERATURE (TYPICAL)



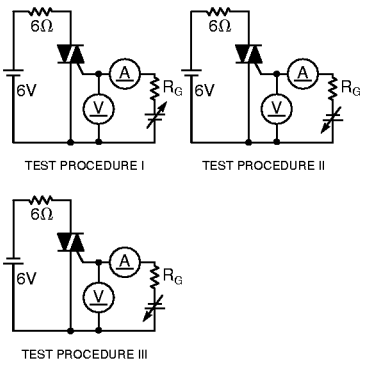
COMMUTATION CHARACTERISTICS (TYPICAL)



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



GATE TRIGGER CHARACTERISTICS TEST CIRCUITS



POWEREX

T-91-01

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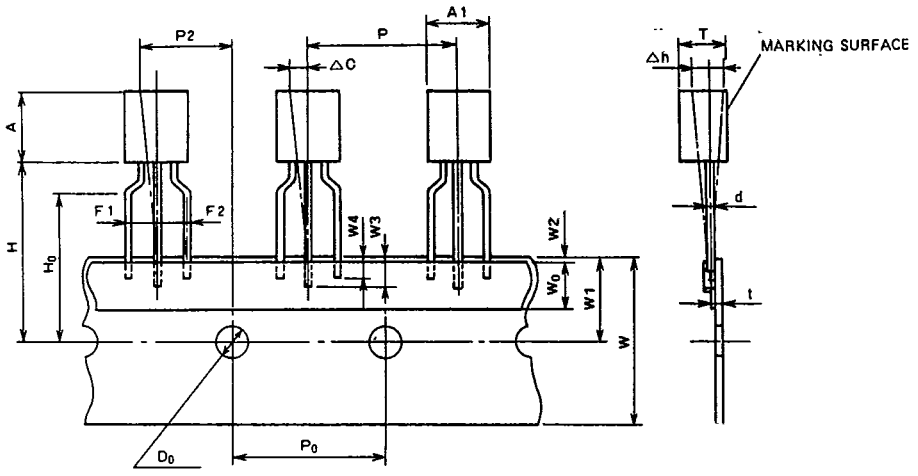
Powerex Europe, S.A., 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

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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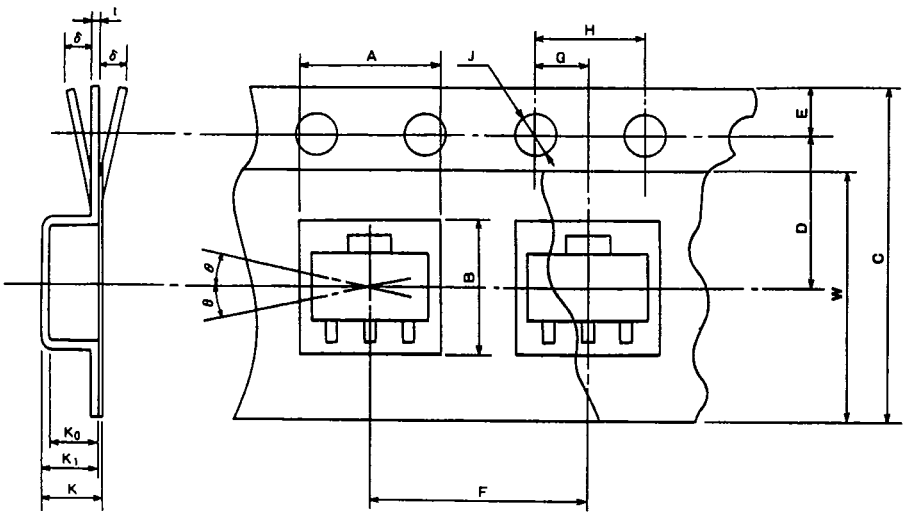
Powerex Semiconductor Data Book
Taping



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