



BCR10KM-12LC

Triac

Medium Power Use

REJ03G0323-0200

Rev.2.00

Dec.17.2004

Features

- $I_T(RMS)$: 10 A
- V_{DRM} : 600 V
- I_{FGTI} , I_{RGTI} , I_{RGT} : 50 mA
- V_{iso} : 2000 V
- The product guaranteed maximum junction temperature 150°C.
- Insulated Type
- Planar Passivation Type

Outline

TO-220FN



1. T_1 Terminal
2. T_2 Terminal
3. Gate Terminal

Applications

Motor control, Heater control

Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		12	
Repetitive peak off-state voltage ^{Note1}	V_{DRM}	600	V
Non-repetitive peak off-state voltage ^{Note1}	V_{DSM}	700	V

BCR10KM-12LC

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_T (RMS)$	10	A	Commercial frequency, sine full wave 360° conduction, $T_c = 96^\circ\text{C}$
Surge on-state current	I_{TSM}	60	A	60Hz sinewave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	15	A^2s	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current
Peak gate power dissipation	P_{GM}	5	W	
Average gate power dissipation	$P_{G(AV)}$	0.5	W	
Peak gate voltage	V_{GM}	10	V	
Peak gate current	I_{GM}	2	A	
Junction temperature	T_j	- 40 to +150	$^\circ\text{C}$	
Storage temperature	T_{stg}	- 40 to +150	$^\circ\text{C}$	
Mass	—	2.0	g	Typical value
Isolation voltage	V_{iso}	2000	V	$T_a = 25^\circ\text{C}$, AC 1 minute, T_1, T_2, G terminal to case

Notes: 1. Gate open.

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak off-state current	I_{DRM}	—	—	2.0	mA	$T_j = 125^\circ\text{C}$, V_{DRM} applied
On-state voltage	V_{TM}	—	—	1.8	V	$T_c = 25^\circ\text{C}$, $I_{TM} = 15\text{ A}$, Instantaneous measurement
Gate trigger voltage ^{Note2}	I V_{FGTI}	—	—	1.5	V	$T_j = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II V_{RGTI}	—	—	1.5	V	
	III V_{RGTIII}	—	—	1.5	V	
Gate trigger current ^{Note2}	I I_{FGTI}	—	—	50	mA	$T_j = 25^\circ\text{C}$, $V_D = 6\text{ V}$, $R_L = 6\ \Omega$, $R_G = 330\ \Omega$
	II I_{RGTI}	—	—	50	mA	
	III I_{RGTIII}	—	—	50	mA	
Gate non-trigger voltage	V_{GD}	0.2	—	—	V	$T_j = 125^\circ\text{C}$, $V_D = 1/2 V_{DRM}$
Thermal resistance	$R_{th(j-c)}$	—	—	3.7	$^\circ\text{C/W}$	Junction to case ^{Note3}
Critical-rate of rise of off-state commutating voltage ^{Note4}	$(dv/dt)_c$	10	—	—	$\text{V}/\mu\text{s}$	$T_j = 125^\circ\text{C}$

Notes: 2. Measurement using the gate trigger characteristics measurement circuit.

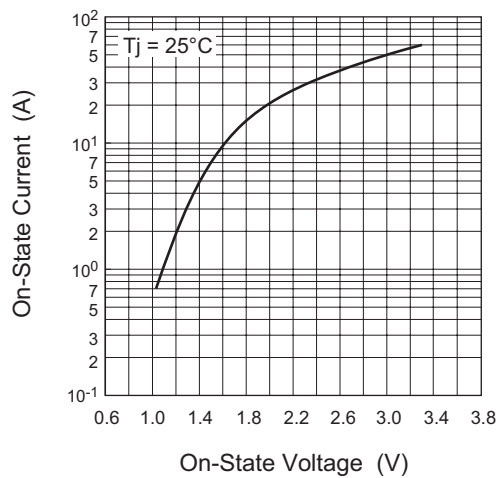
3. The contact thermal resistance $R_{th(c-f)}$ in case of greasing is 0.5°C/W .

4. Test conditions of the critical-rate of rise of off-state commutating voltage is shown in the table below.

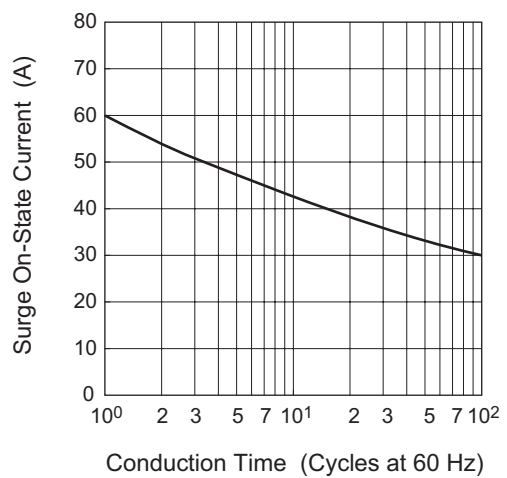
Test conditions	Commutating voltage and current waveforms (inductive load)
1. Junction temperature $T_j = 125^\circ\text{C}$ 2. Rate of decay of on-state commutating current $(di/dt)_c = -5\text{ A/ms}$ 3. Peak off-state voltage $V_D = 400\text{ V}$	

Performance Curves

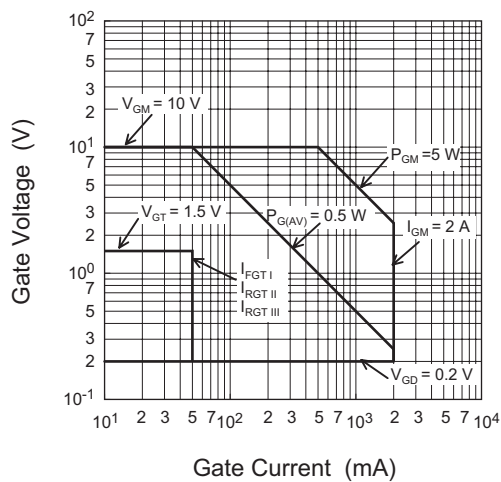
Maximum On-State Characteristics



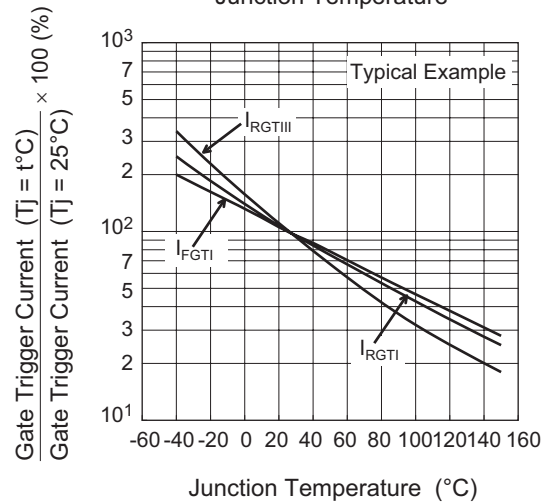
Rated Surge On-State Current



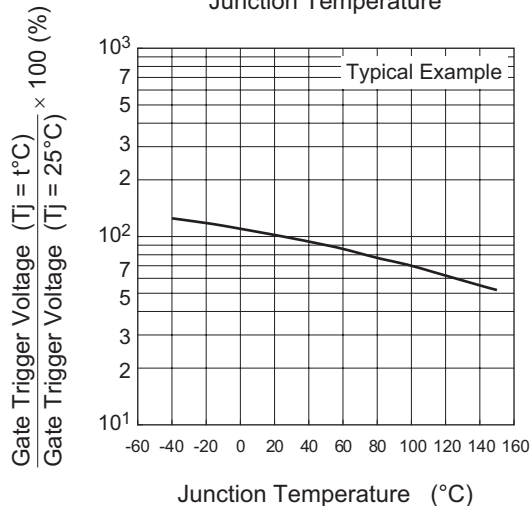
Gate Characteristics (I, II and III)



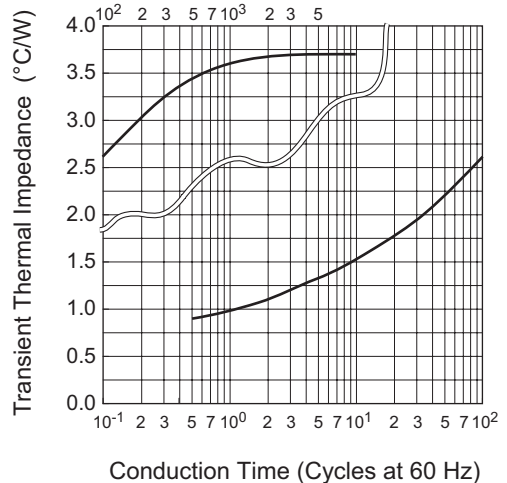
Gate Trigger Current vs. Junction Temperature



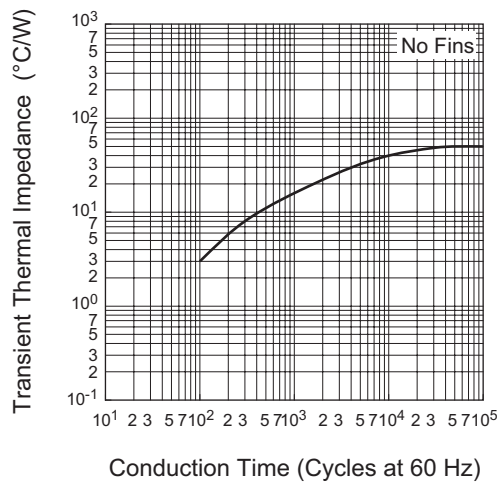
Gate Trigger Voltage vs. Junction Temperature



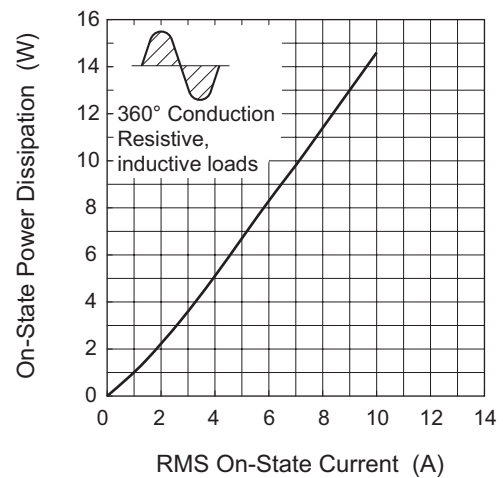
Maximum Transient Thermal Impedance Characteristics (Junction to case)



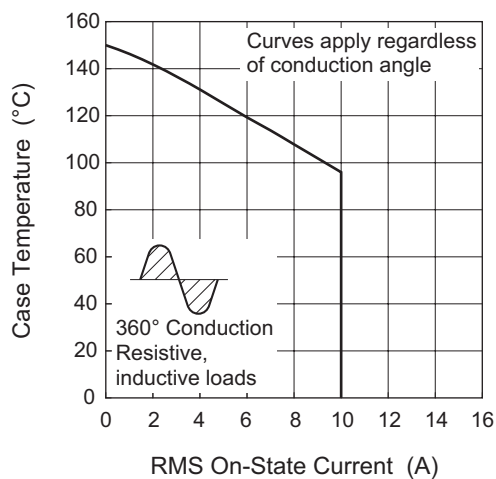
Maximum Transient Thermal Impedance Characteristics (Junction to ambient)



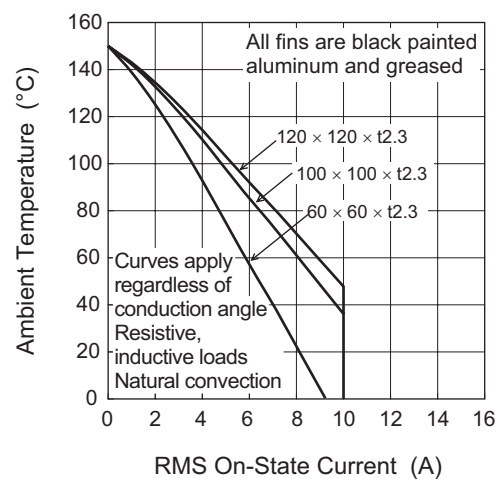
Maximum On-State Power Dissipation



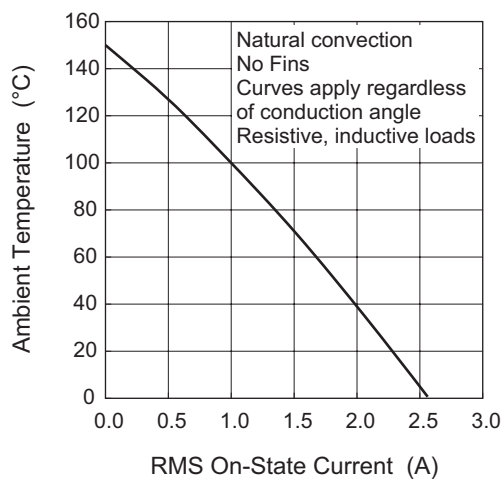
Allowable Case Temperature vs. RMS On-State Current



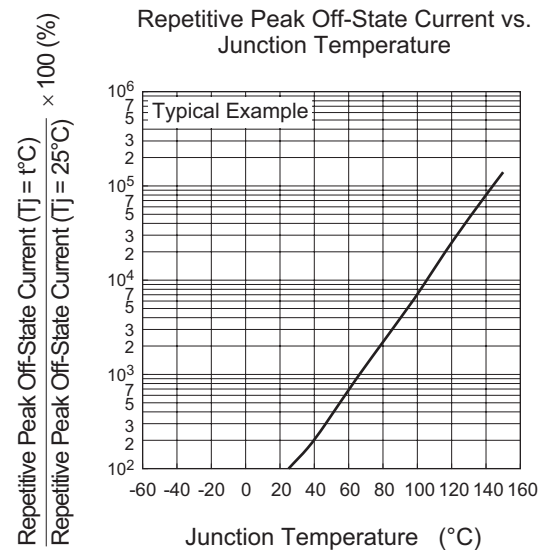
Allowable Ambient Temperature vs. RMS On-State Current

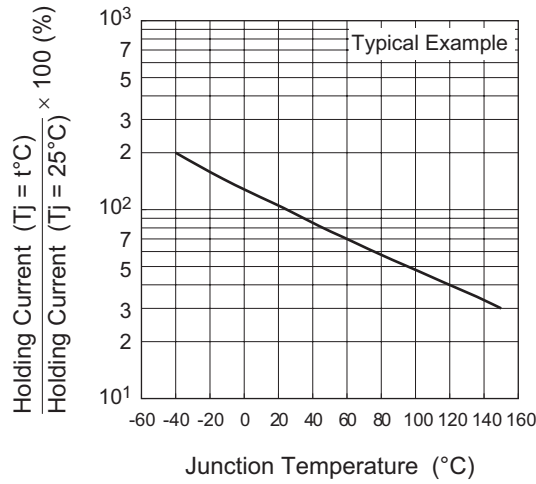
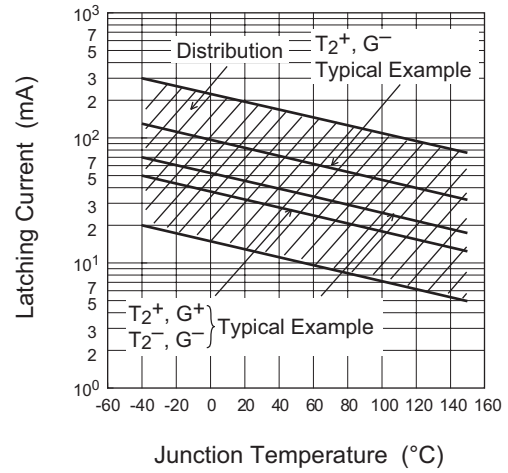
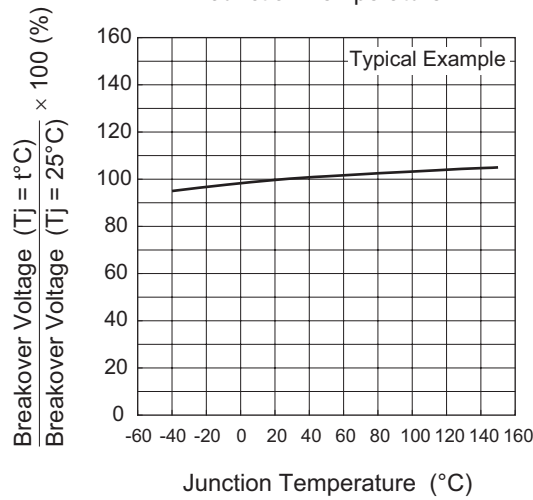
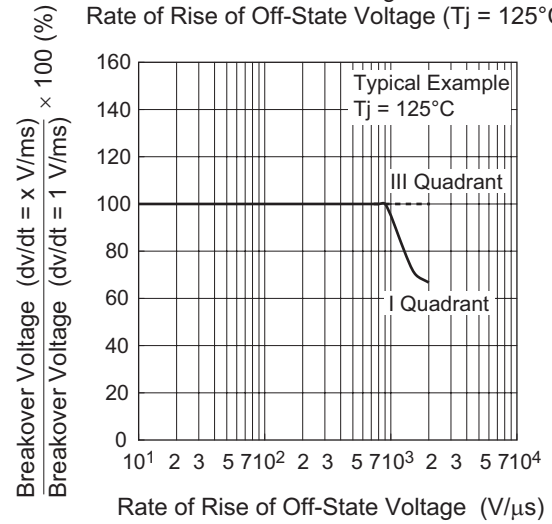
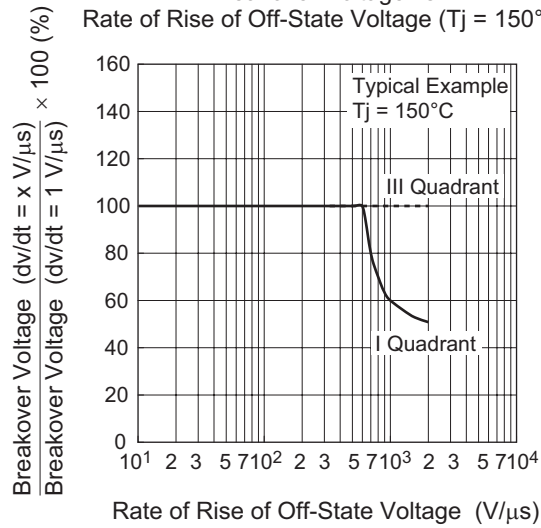
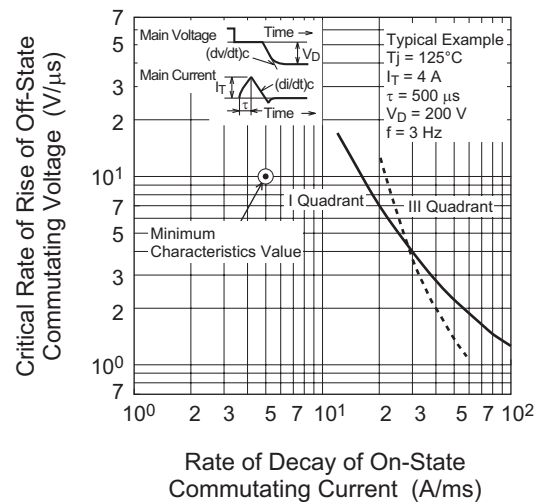


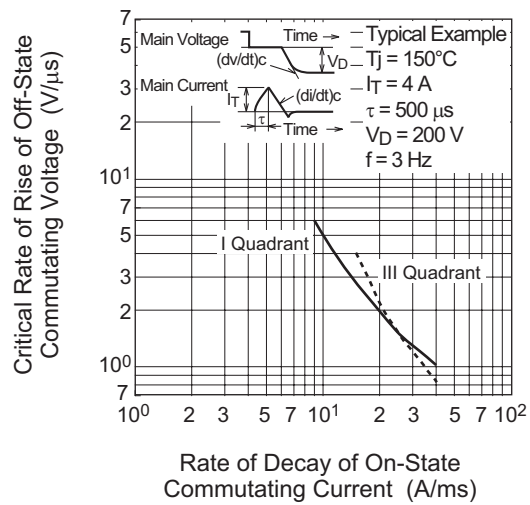
Allowable Ambient Temperature vs. RMS On-State Current



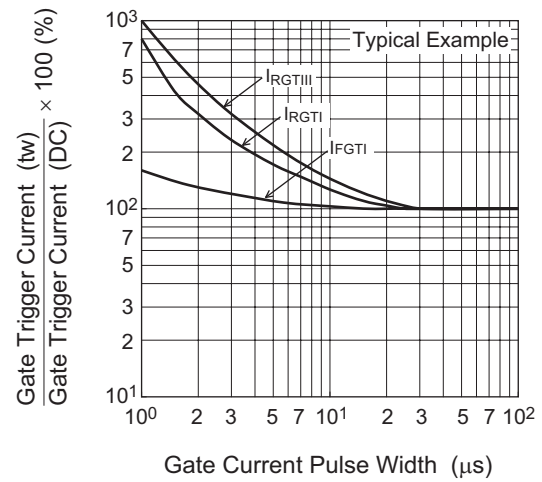
Repetitive Peak Off-State Current vs. Junction Temperature



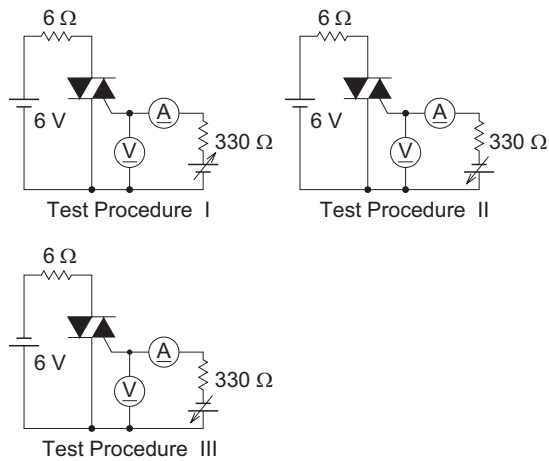
Holding Current vs.
Junction TemperatureLatching Current vs.
Junction TemperatureBreakover Voltage vs.
Junction TemperatureBreakover Voltage vs.
Rate of Rise of Off-State Voltage ($T_j = 125^\circ\text{C}$)Breakover Voltage vs.
Rate of Rise of Off-State Voltage ($T_j = 150^\circ\text{C}$)Commutation Characteristics ($T_j = 125^\circ\text{C}$)

Commutation Characteristics ($T_j = 150^\circ\text{C}$)

Gate Trigger Current vs. Gate Current Pulse Width



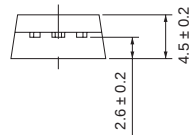
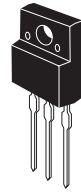
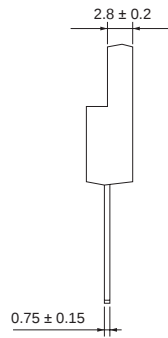
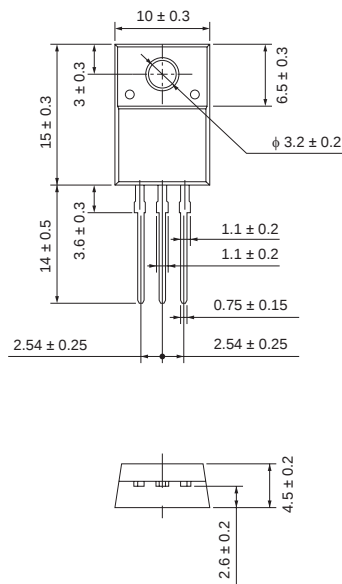
Gate Trigger Characteristics Test Circuits



Package Dimensions

TO-220FN

EIAJ Package Code	JEDEC Code	Mass (g) (reference value)	Lead Material
—	—	2.0	Cu alloy



Note 1) The dimensional figures indicate representative values unless otherwise the tolerance is specified.

Symbol	Dimension in Millimeters		
	Min	Typ	Max
A	—	—	—
A ₁	—	—	—
A ₂	—	—	—
b	—	—	—
D	—	—	—
E	—	—	—
e	—	—	—
x	—	—	—
y	—	—	—
y ₁	—	—	—
ZD	—	—	—
ZE	—	—	—

Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Tube	50	Type name	BCR10KM-12LC
Lead form	Tube	50	Type name – Lead forming code	BCR10KM-12LC-A8

Note : Please confirm the specification about the shipping in detail.

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