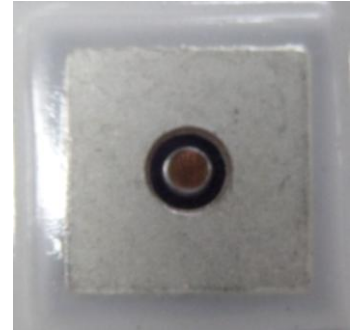


# JMC090-16/18/20

## Description:

- 1) Chip: double mesa SCRs of reverse blocking high-voltage
- 2) Chip area: 10.8mm×10.8mm (central gate thyristor)
- 3) Technology: mesa glass passivation technology, multilayer metallization technology and non-void welding by vacuum welding technology



## Typical Application:

Reactive power compensation, solid state relay, power module, etc.

## Absolute Maximum Ratings (Packaged into modules, unless otherwise specified, $T_C=25^\circ\text{C}$ )

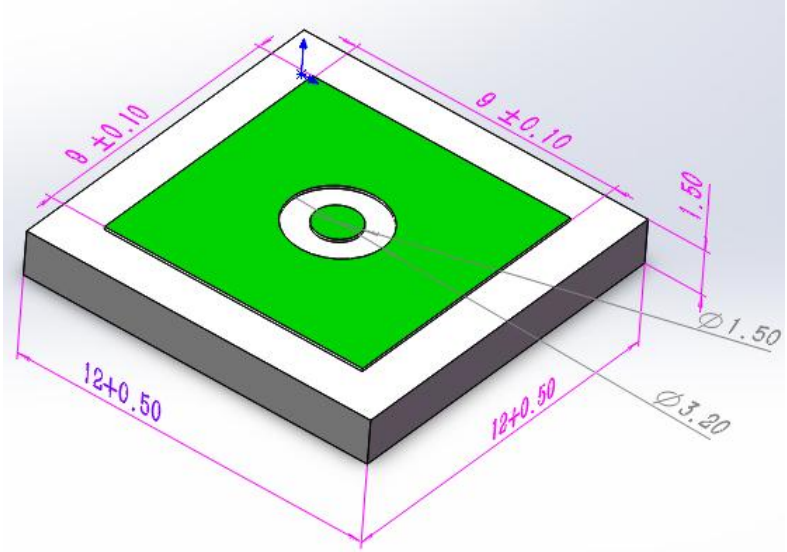
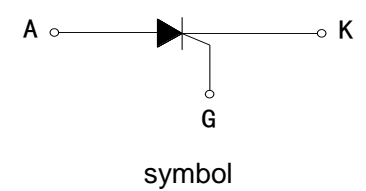
Parameter	Test Conditions	Symbol	Values	Unit
Operating junction temperature range		$T_j$	-40-125	$^\circ\text{C}$
Repetitive peak off-state voltage	$T_j=25^\circ\text{C}$	$V_{\text{DRM}}$	1200/1600/1800	V
Repetitive peak reverse voltage	$T_j=25^\circ\text{C}$	$V_{\text{RRM}}$	1200/1600/1800	V
Average on-state current	$T_C=80^\circ\text{C}$	$I_{\text{T(AV)}}$	90	A
Peak on-state surge current	$t_p=10\text{ms}$	$I_{\text{TSM}}$	2000	A
$I^2t$ value for fusing	$t_p=10\text{ms}$	$I^2t$	20000	$\text{A}^2\text{s}$
Critical rate of rise of on-state current	$V_D=2/3V_{\text{DRM}}$ $t_p=200\mu\text{s}$ $I_G=0.3\text{A}$ $T_j=125^\circ\text{C}$ $dI_G/dt=0.3\text{A}/\mu\text{s}$	$dI/dt$	150	$\text{A}/\mu\text{s}$

## Electrical Characteristics (Packaged into modules, unless otherwise specified, $T_C=25^\circ\text{C}$ )

Parameter	Test Conditions	Symbol	Values	Unit
Peak on-state voltage	$I_T=280\text{A}$ $t_p=380\mu\text{s}$	$V_{\text{TM}}$	$\leq 1.8$	V
Repetitive peak off-state current	$V_D=V_{\text{DRM}}$ $T_C=25^\circ\text{C}$	$I_{\text{DRM1}}$	$\leq 100$	$\mu\text{A}$
	$T_C=125^\circ\text{C}$	$I_{\text{DRM2}}$	$\leq 20$	$\text{mA}$
Repetitive peak reverse current	$V_R=V_{\text{RRM}}$ $T_C=25^\circ\text{C}$	$I_{\text{RRM1}}$	$\leq 100$	$\mu\text{A}$
	$T_C=125^\circ\text{C}$	$I_{\text{RRM2}}$	$\leq 20$	$\text{mA}$
Triggering gate current	$V_D=12\text{V}$ $R_L=30\Omega$	$I_{\text{GT}}$	20-120	$\text{mA}$
Latching current	$I_G=1.2 I_{\text{GT}}$	$I_L$	$\leq 300$	$\text{mA}$
Holding current	$I_T=1\text{A}$	$I_H$	$\leq 250$	$\text{mA}$
Triggering gate voltage	$V_D=12\text{V}$ $R_L=30\Omega$	$V_{\text{GT}}$	$\leq 2$	V

Non triggering gate voltage	$V_D = V_{DRM} T_j = 125^\circ\text{C}$	$V_{GD}$	$\geq 0.25$	V
Critical rate of rise of voltage	$V_D = 2/3 V_{DRM} T_j = 125^\circ\text{C}$ Gate Open	dV/dt	$\geq 1000$	V/ $\mu\text{s}$

### Mechanical Characteristics

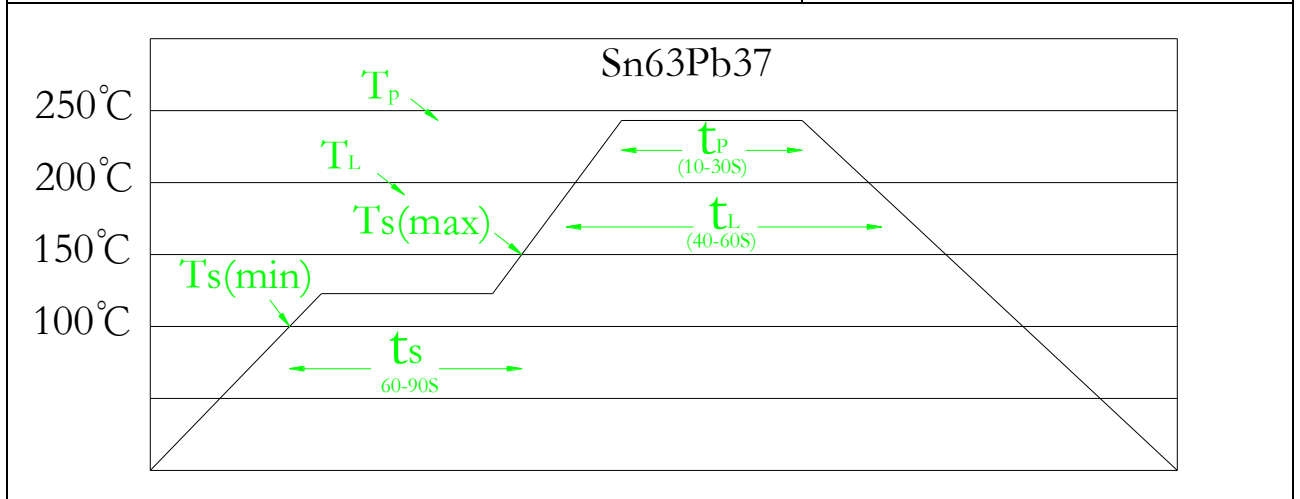
Module size	12 mm×12 mm
Module thickness	1.6 mm
Welding area of cathode electrode	9 mm×9 mm
Welding area of control electrode	$\phi 1.5\text{mm}$
	
 <p style="text-align: center;">symbol</p>	

### Working Conditions

- 1) No severe mechanical shock as impact and drop off in the process of transportation, storage and working of product.
- 2) Storage conditions
  - Temperature: 5~40°C
  - Relative humidity:  $\leq 45\%$
  - Storage time: 3 days for the open package; 3 months for the closed package
- 3) Welding conditions
  - Recommended solder component: Sn63Sb37 (or lead-free solder of liquid quadrant less than 240°C)
  - Recommended soldering conditions: shown in Table 1
- 4) Welding in the gate spot is recommended to be completed one-time by using fixture. If it is necessary to use a soldering iron, the temperature of soldering iron is controlled within 280°C and time is controlled within 20s.

**Table 1**

<b>Sn63Sb37 Soldering conditions</b>		
Average heating rate		3°C/s (Max)
Preheating activation	Low limit of temperature $T_s(\text{Min})$	100°C
	Upper limit of temperature $T_s(\text{Max})$	150°C
	Time (min ~ max)	$t_s$ 60 ~ 90s
Reflow zone	Melting point temperature $T_L$	183°C (Sn63Sb37)
	Peak temperature $T_P$	240°C (+0/-5°C)
	Reflow time (Peak temperature $\pm 5^\circ\text{C}$ )	$t_p$ 10~30s
	Melting time $T_L$	$t_L$ 40~60s
Maximum cooling rate		3.5°C/s
Recommended process time		300 ~ 360s



**Ordering Information**

<b>J</b>	<b>M</b>	<b>C</b>	<b>090</b>	<b>-16</b>
JieJie Microelectronics Co.,Ltd				
Module of series			$I_{T(AV)}=90A$	
C:Central gate			16: $V_{DRM}/V_{RRM} \geq 1600V$ 18: $V_{DRM}/V_{RRM} \geq 1800V$ 20: $V_{DRM}/V_{RRM} \geq 2000V$	