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BRCL3160MF /  
MOSFET  
BRCL3160MF SOT23-6  
BRCL3160MF

BRCL3160MF





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/Parameter	/Symbol	/Value	/Unit
$V_{DD}$ input pin voltage	$V_{IN}$	-0.3 to +6.0	V
$V_M$ input pin voltage	$V_{VM}$	-6.0	



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BRCL3160MF

MOSFET

50m

The BRCL3160MF monitors the voltage and current of a battery and protects it from being damaged due to overcharge voltage, overdischarge voltage, overdischarge current, and short circuit conditions by disconnecting the battery from the load or charger. The peripheral circuit is very simple. The MOSFET is integrated and its  $R_{DS(ON)}$  is as low as 50m typical.

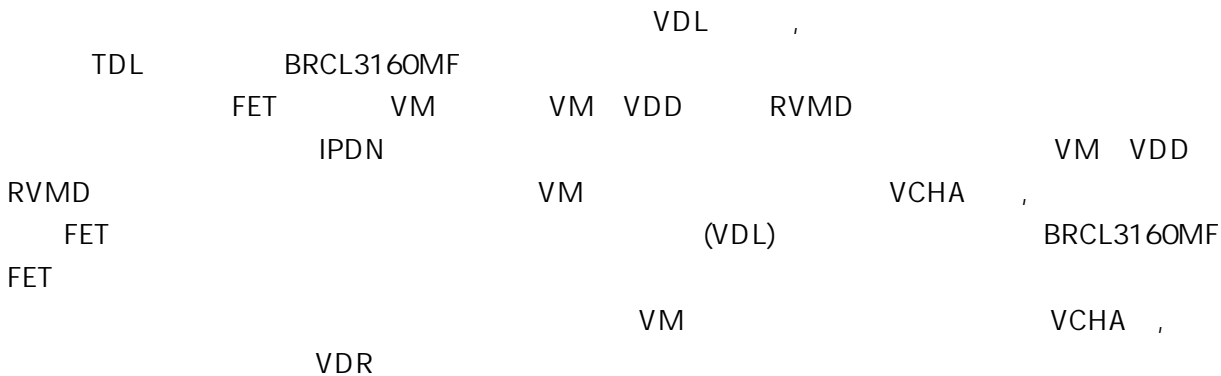
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If no exception condition is detected, charging and discharging can be carried out freely. This condition is called the normal operating mode.





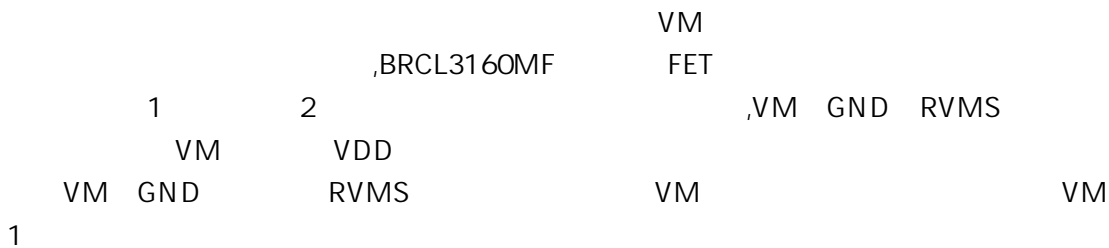
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When the battery voltage drops below the overdischarge detection voltage (VDL) during discharging under normal condition and it continues for the overdischarge detection delay time (tDL) or longer, the BRCL3160MF turns the discharging control FET off and stops discharging. This condition is called overdischarge condition. After the discharging control FET is turned off, the VM pin is pulled up by the RVMD resistor between VM and VDD in BRCL3160MF the current of the chip is reduced to the power-down current (IPDN). This condition is called power-down condition. The VM and VDD pins are shorted by the RVMD resistor. The power-down condition is released when a charger is connected and the potential difference between VM and VDD becomes typical or higher, at this time, the FET is still off. When the battery voltage becomes the overdischarge detection voltage (VDL) or higher (see note), the BRCL3160MF turns the FET on and changes to the normal condition from the overdischarge condition.

Note: If the VM pin voltage is no less than the charger detection voltage (VCHA), when the battery under overdischarge condition is connected to a charger, the overdischarge condition is released (the discharging control FET is turned on) as usual, provided that the battery voltage reaches the overdischarge release voltage (VDR) or higher.

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(TCU)	BRCL3160MF	FET	(VCHA)		
	VM GND		(VCHA)	OV	OV

If the VM pin voltage drops below the charger detection voltage (VCHA) during charging under the normal condition and it continues for the overcharge detection delay time (TCU) or longer, the BRCL3160MF turns the charging control FET off and stops charging. This action is called abnormal charge current detection.

Abnormal charge current detection is released when the voltage difference between VM pin and GND pin becomes higher than the charger detection voltage (VCHA) by separating the charger. Since the O V battery charging function has higher priority than the abnormal charge current detection function, abnormal charge current may not be detected by the product with the O V battery charging function while the battery voltage is low.

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VM	VSHORT		tSHORT
BRCL3160MF	VM	VSHORT	

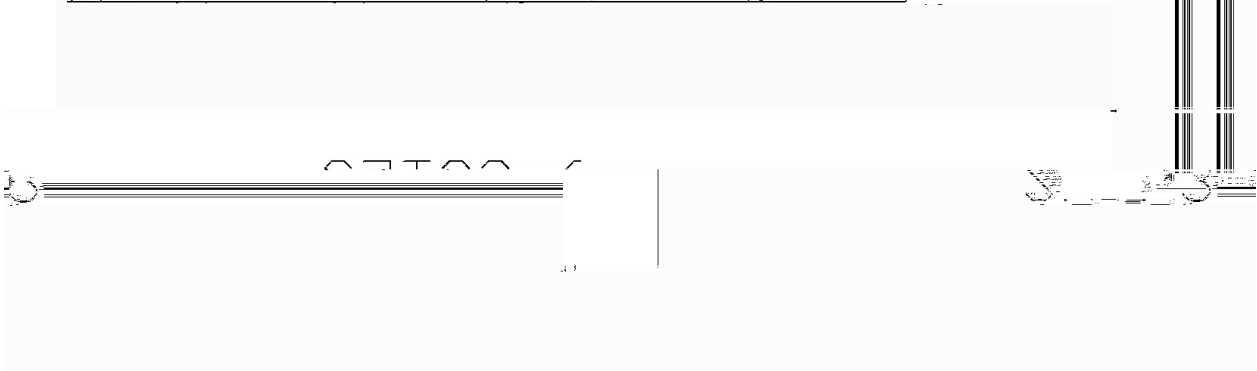
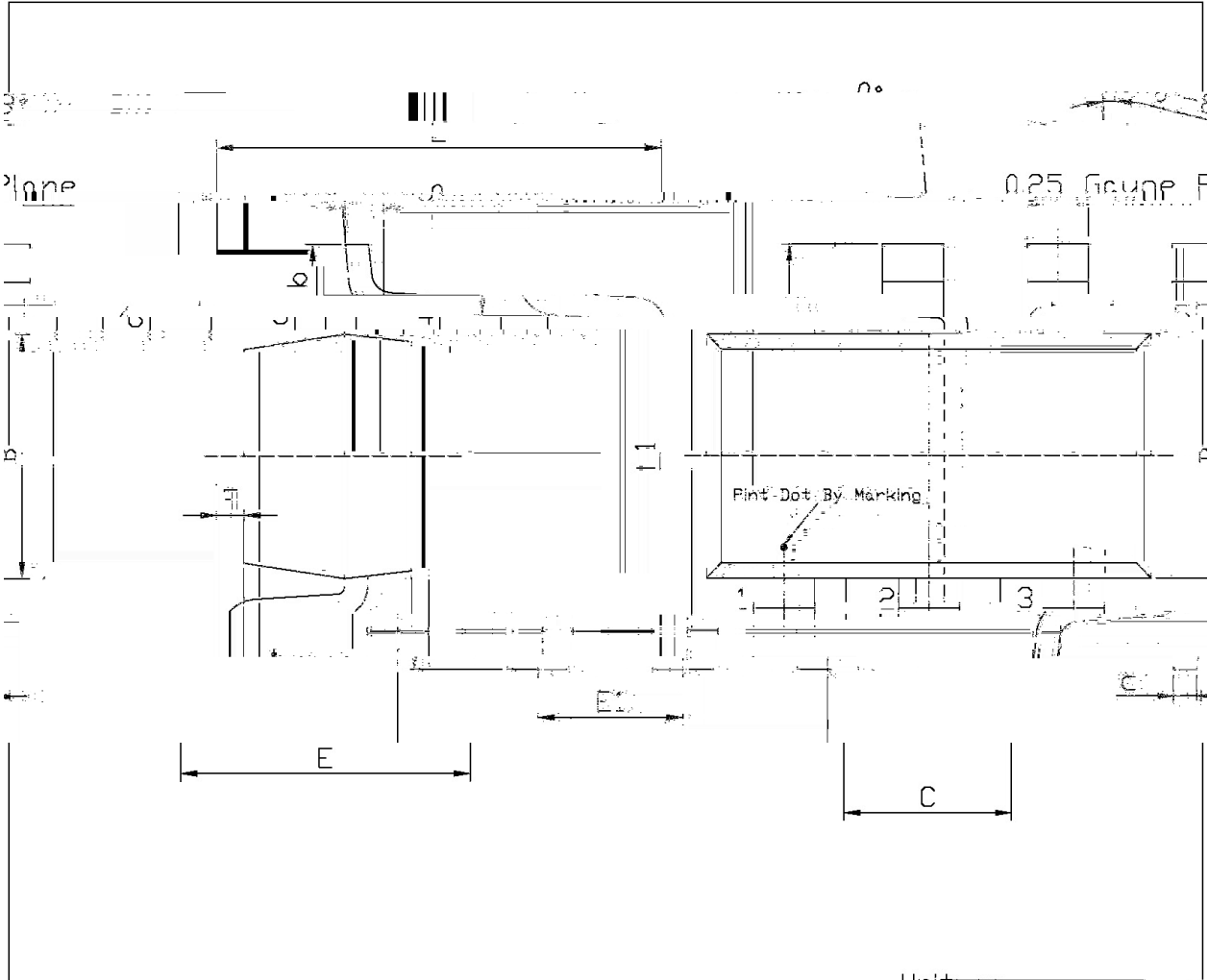


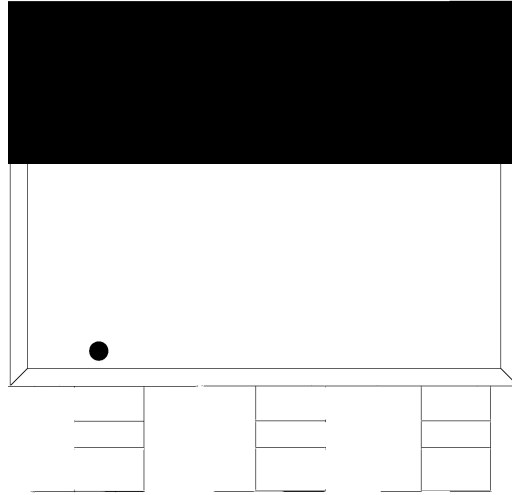


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### Temperature Profile for IR Reflow Soldering(Pb-Free)



Note:

1      150 180      60 90see