

# NXH75M65L4Q1SG, NXH75M65L4Q1PTG

## ABSOLUTE MAXIMUM RATINGS

Rating	Symbol	Value	Unit
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### IGBT (T11, T12, T13, T14, T21, T22)

Collector-emitter voltage	$V_{CES}$	650	V
Collector current @ $T_h = 80^\circ\text{C}$ (per IGBT)	$I_C$	59	A
Pulsed collector current, $T_{pulse}$ limited by $T_{jmax}$	$I_{CM}$	176	A
Power Dissipation Per IGBT $T_j = T_{jmax}$ , $T_h = 80^\circ\text{C}$	$P_{tot}$	83	W
Gate-emitter voltage	$V_{GE}$	$\pm 20$	V
Maximum Junction Temperature	$T_J$	175	$^\circ\text{C}$

### DIODE (D12, D14, D20, D21, D22)

Peak Repetitive Reverse Voltage	$V_{RRM}$	650	V
Forward Current, DC @ $T_h = 80^\circ\text{C}$ (per Diode)	$I_F$	50	A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	$I_{FSM}$	225	A
Power Dissipation Per Diode $T_j = T_{jmax}$ , $T_h = 80^\circ\text{C}$	$P_{tot}$	86	W
Maximum Junction Temperature	$T_J$	175	$^\circ\text{C}$

### THERMAL PROPERTIES

Operating Temperature under switching condition	$T_{VJ OP}$	-40 to ( $T_{jmax} - 25$ )	$^\circ\text{C}$
Storage Temperature range	$T_{stg}$	-40 to 125	$^\circ\text{C}$

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### ELECTRICAL CHARACTERISTICS ( $T_J = 25^\circ\text{C}$ unless otherwise specified) (continued)

Parameter	Test Condition	Symbol	Min	Typ	Max	Unit
<b>IGBT (T11, T12, T13, T14, T21, T22)</b>						
Input capacitance	$V_{CE} = 30\text{ V}, V_{GE} = 0\text{ V}, f = 1\text{ MHz}$	$C_{ies}$	–	5665	–	pF
Output capacitance		$C_{oes}$	–	205	–	
Reverse transfer capacitance		$C_{res}$	–	100	–	
Gate charge total	$V_{CE} = 480\text{ V}, I_C = 50\text{ A}, V_{GE} = \pm 15\text{ V}$	$Q_g$	–	550	–	nC
Thermal Resistance – chip-to-heatsink	Thermal grease, Thickness = 2.1 Mil $\pm 2\%$ $\lambda = 2.9\text{ W/mK}$	$R_{thJH}$	–	1.15	–	$^\circ\text{C/W}$
Thermal Resistance – chip-to-case		$R_{thJC}$	–	0.75	–	$^\circ\text{C/W}$

### IGBT INVERSE DIODE (D12, D14, D21, D22)

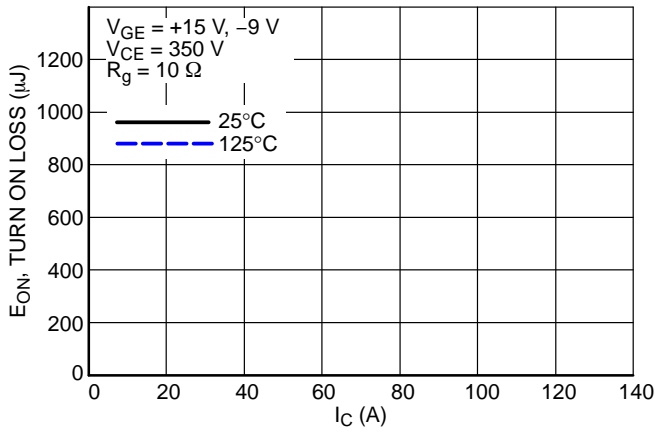


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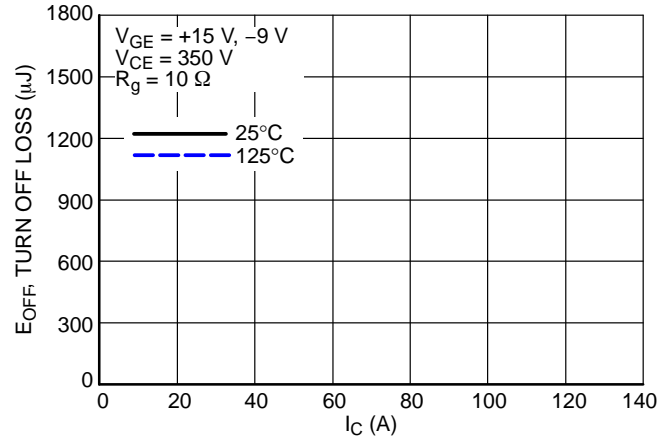
**TYPICAL CHARACTERISTICS (T11, T12, T13, T14) IGBT COMMUTATES D21, D22 DIODE**

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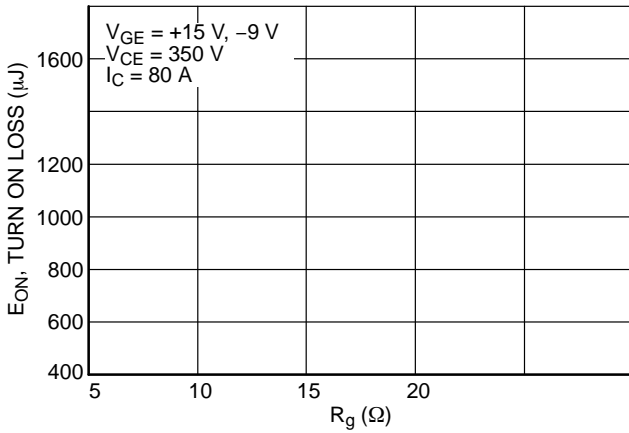
## TYPICAL CHARACTERISTICS (T21, T22) IGBT COMMUTATES D20 DIODE



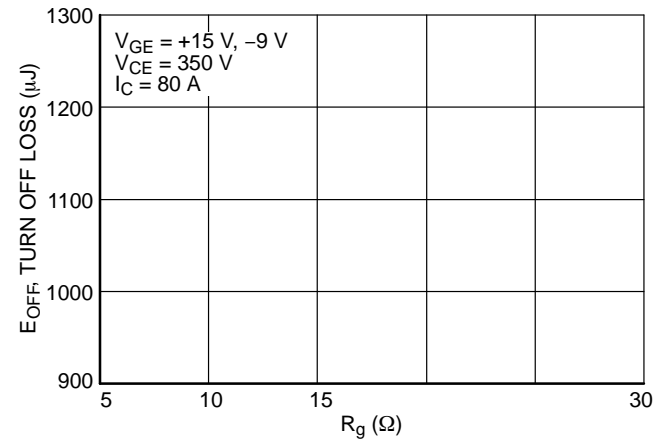
**Figure 15. Typical Turn ON Loss vs. IC**



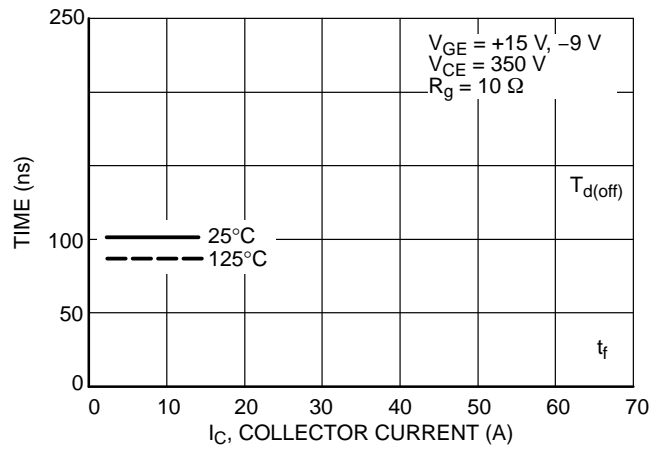
**Figure 16. Typical Turn OFF Loss vs. IC**



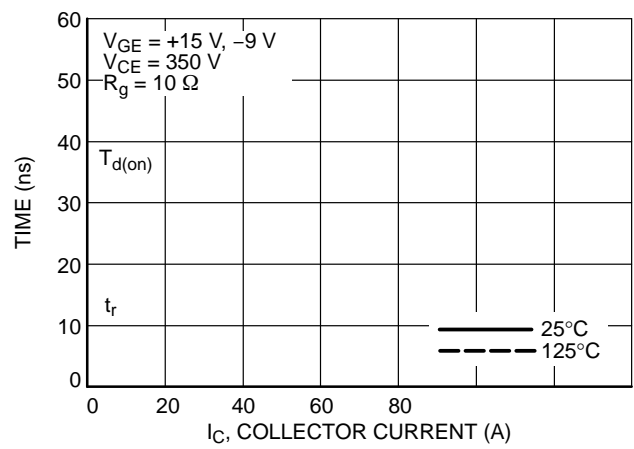
**Figure 17. Typical Turn ON Loss vs. R\_G**



**Figure 18. Typical Turn OFF Loss vs. R\_G**



**Figure 19. Typical Turn Off Switching Time vs. IC**



**Figure 20. Typical Turn On Switching Time vs. IC**

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## TYPICAL CHARACTERISTICS (T21, T22) IGBT COMMUTATES D20 DIODE (CONTINUED)

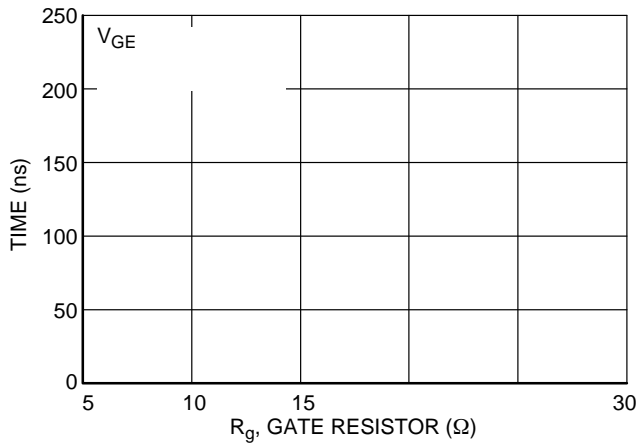


Figure 21. Typical Turn Off Switching Time vs. Rg

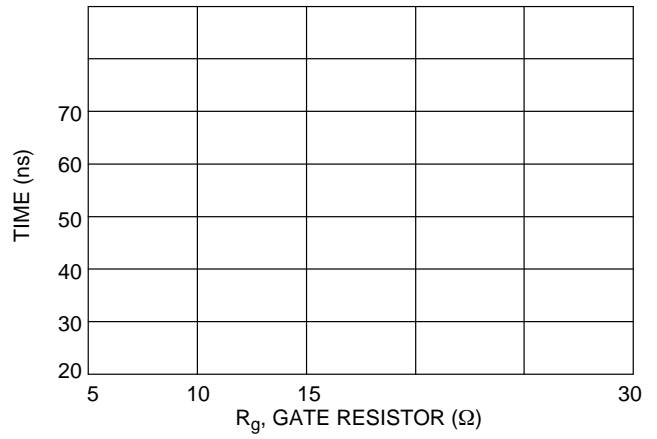


Figure 22. Typical Turn On Switching Time vs. Rg

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## TYPICAL CHARACTERISTICS DIODE (CONTINUED)

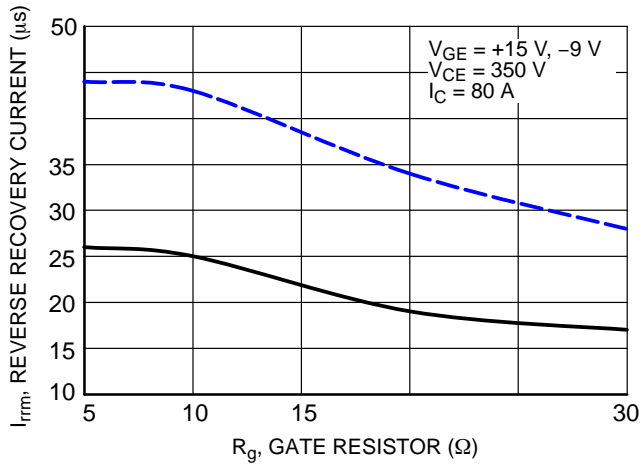


Figure 27. Typical Reverse Recovery Peak Current vs.  $R_g$

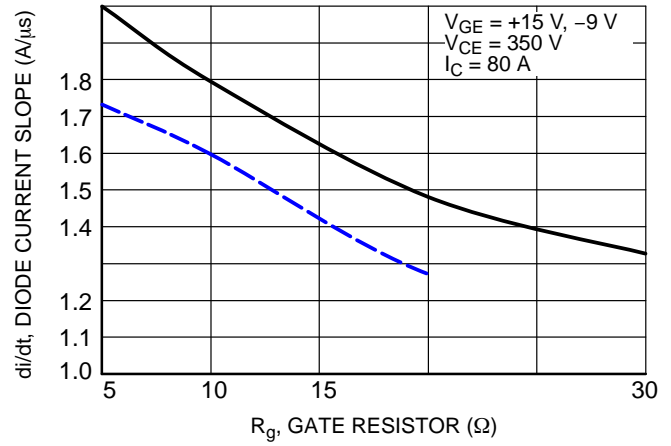
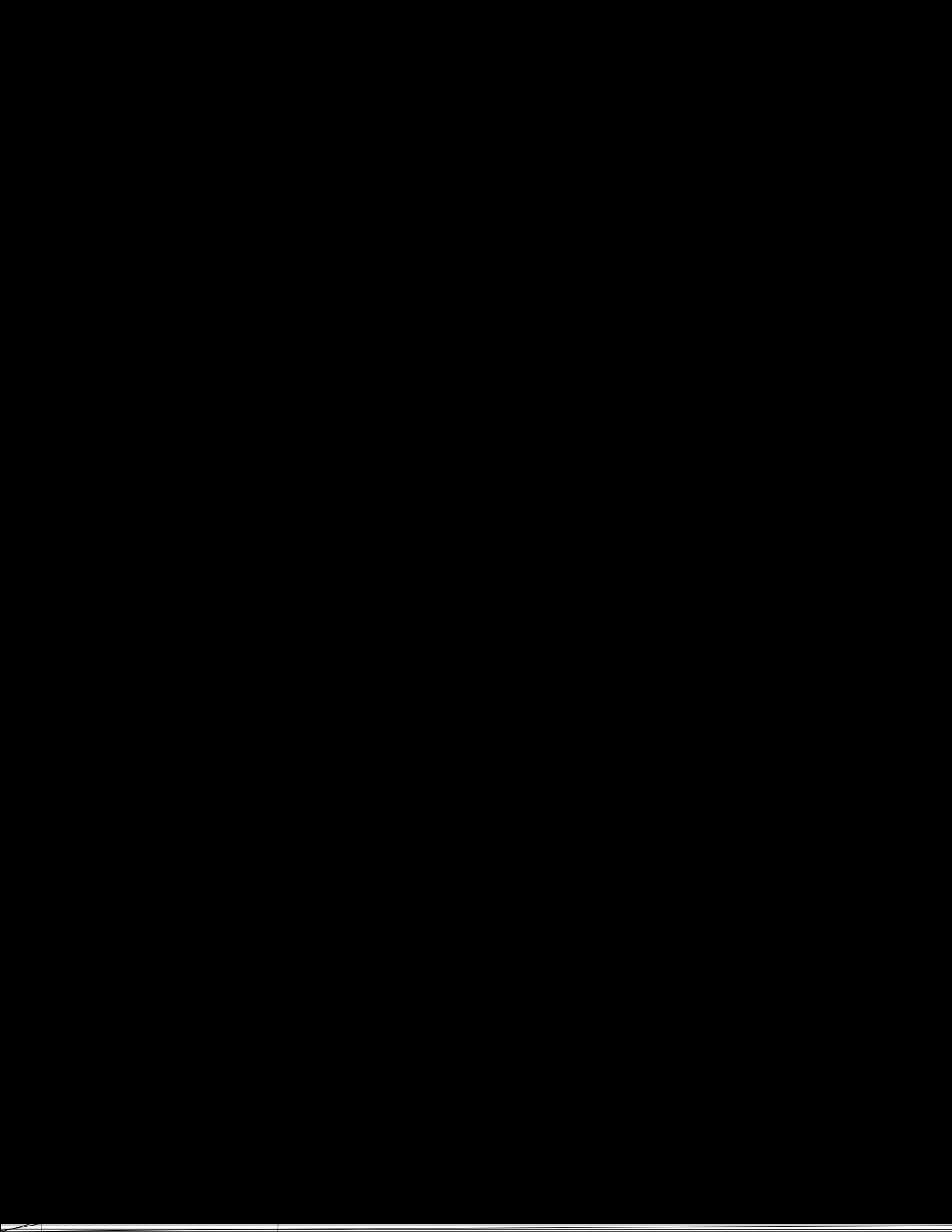


Figure 28. Typical  $di/dt$  vs.  $R_g$



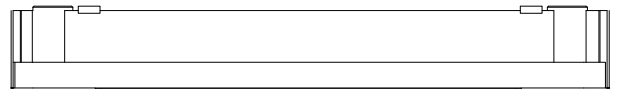






**PIM27, 71x37.4 (PRESSFIT PIN)**  
CASE 180CP  
ISSUE A

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