



# BU208A BU508A/BU508AFI

## HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTORS

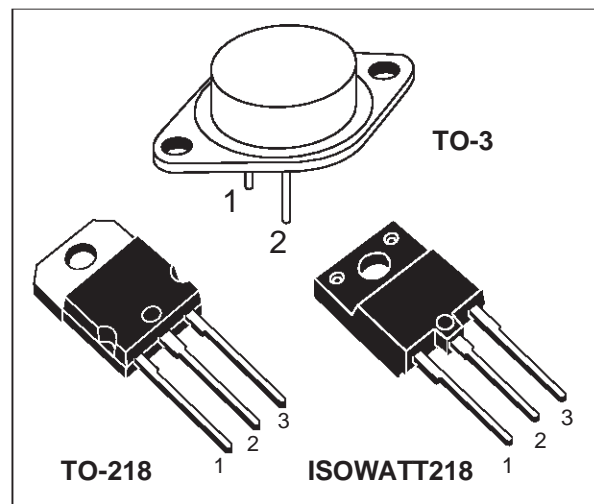
- STMicroelectronics PREFERRED SALESTYPES
- HIGH VOLTAGE CAPABILITY (> 1500 V)
- FULLY INSULATED PACKAGE (U.L. COMPLIANT) FOR EASY MOUNTING

### APPLICATIONS:

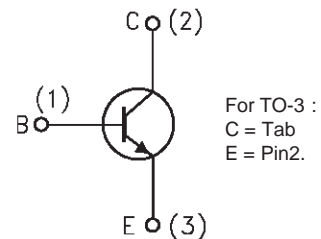
- HORIZONTAL DEFLECTION FOR COLOUR TV

### DESCRIPTION

The BU208A, BU508A and BU508AFI are manufactured using Multi-epitaxial Mesa technology for cost-effective high performance and use a Hollow Emitter structure to enhance switching speeds.



### INTERNAL SCHEMATIC DIAGRAM



SC06960

### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value			Unit
$V_{CES}$	Collector-Emitter Voltage ( $V_{BE} = 0$ )	1500			V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	700			V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	10			V
$I_C$	Collector Current	8			A
$I_{CM}$	Collector Peak Current ( $t_p < 5$ ms)	15			A
		<b>BU208A</b>	<b>BU508A</b>	<b>BU508AFI</b>	
		<b>TO - 3</b>	<b>TO - 218</b>	<b>ISOWATT218</b>	
$P_{tot}$	Total Dissipation at $T_c = 25$ °C	150	125	50	W
$V_{isol}$	Insulation Withstand Voltage (RMS) from All Three Leads to External Heatsink			2500	V
$T_{stg}$	Storage Temperature	-65 to 175	-65 to 150	-65 to 150	°C
$T_j$	Max. Operating Junction Temperature	175	150	150	°C

# BU208A / BU508A / BU508AFI

## THERMAL DATA

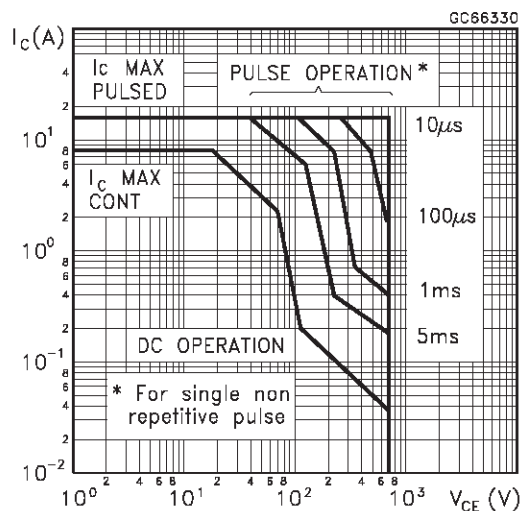
			TO-3	TO-218	ISOWATT218	
$R_{thj-case}$	Thermal Resistance Junction-case	Max	1	1	2.5	$^{\circ}\text{C}/\text{W}$

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

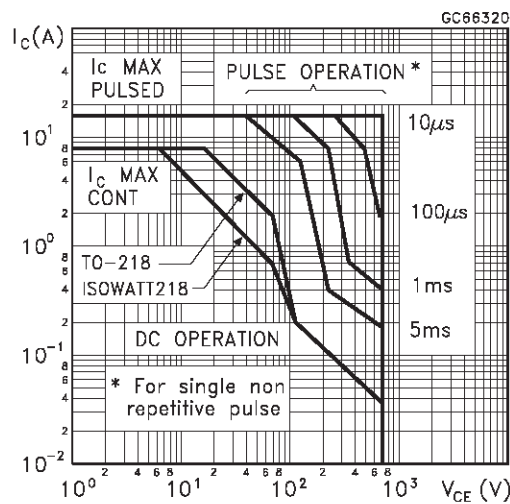
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CES}$	Collector Cut-off Current ( $V_{BE} = 0$ )	$V_{CE} = 1500\text{ V}$ $V_{CE} = 1500\text{ V}$ $T_C = 125^{\circ}\text{C}$			1 2	$\text{mA}$ $\text{mA}$
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = 5\text{ V}$			100	$\mu\text{A}$
$V_{CEO(sus)*}$	Collector-Emitter Sustaining Voltage ( $I_B = 0$ )	$I_C = 100\text{ mA}$	700			$\text{V}$
$V_{EBO}$	Emitter Base Voltage ( $I_C = 0$ )	$I_E = 10\text{ mA}$	10			$\text{V}$
$V_{CE(sat)*}$	Collector-Emitter Saturation Voltage	$I_C = 4.5\text{ A}$ $I_B = 2\text{ A}$			1	$\text{V}$
$V_{BE(sat)*}$	Base-Emitter Saturation Voltage	$I_C = 4.5\text{ A}$ $I_B = 2\text{ A}$			1.3	$\text{V}$
$t_s$ $t_f$	INDUCTIVE LOAD Storage Time Fall Time	$I_C = 4.5\text{ A}$ $h_{FE} = 2.5$ $V_{CC} = 140\text{ V}$ $L_C = 0.9\text{ mH}$ $L_B = 3\text{ }\mu\text{H}$		7 550		$\mu\text{s}$ $\text{ns}$
$f_T$	Transition Frequency	$I_C = 0.1\text{ A}$ $V_{CE} = 5\text{ V}$ $f = 5\text{ MHz}$		7		$\text{MHz}$

\* Pulsed: Pulse duration = 300  $\mu\text{s}$ , duty cycle 1.5 %

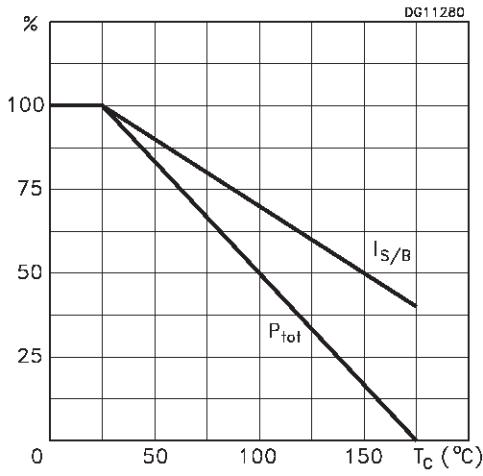
Safe Operating Area (TO-3)



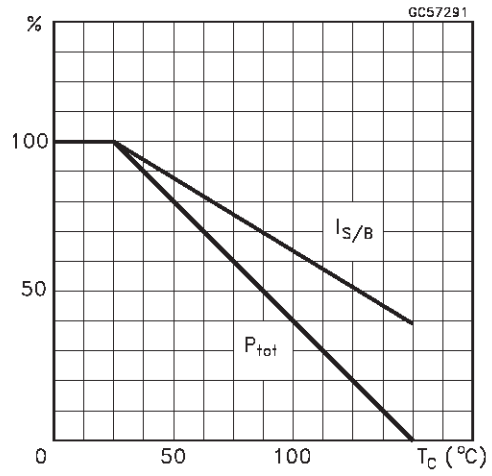
Safe Operating Areas (TO-218/ISOWATT218)



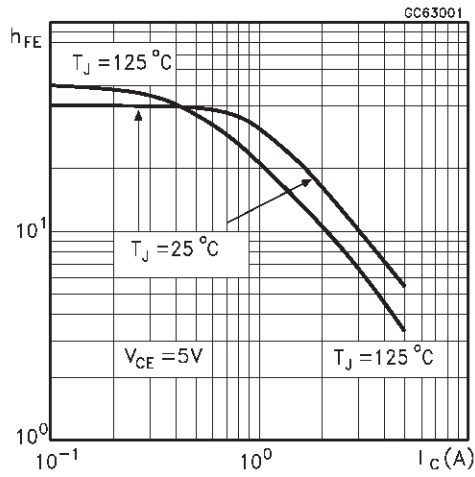
Derating Curves (TO-3)



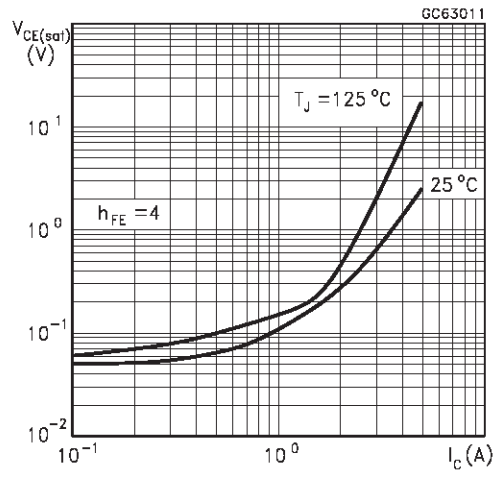
Derating Curves (TO-218/ISOWATT218)



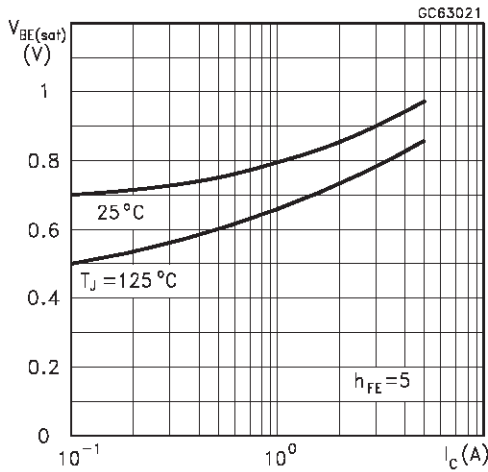
DC Current Gain



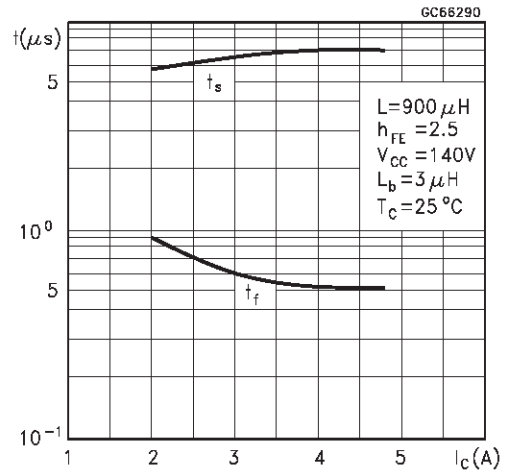
Collector Emitter Saturation Voltage



Base Emitter Saturation Voltage



Switching Time Inductive Load



Switching Time Inductive Load

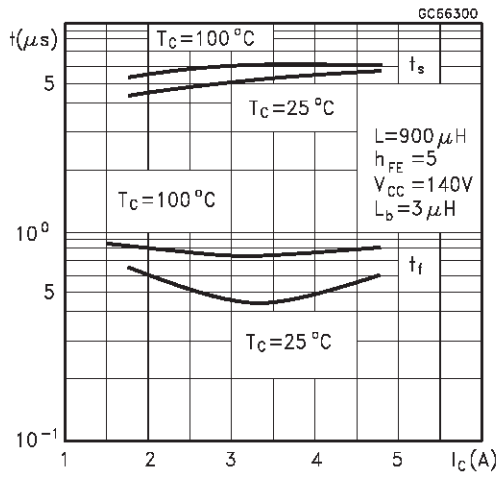
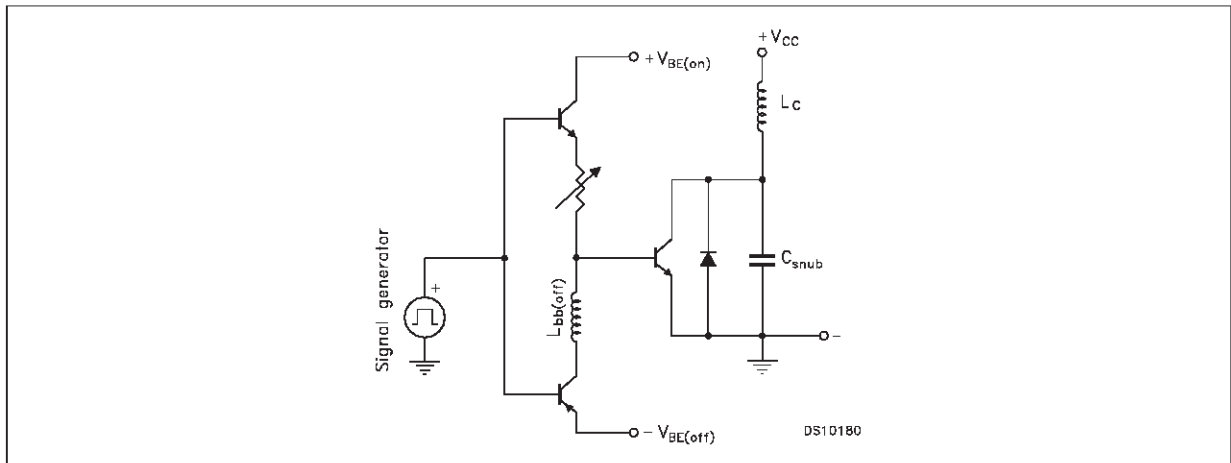
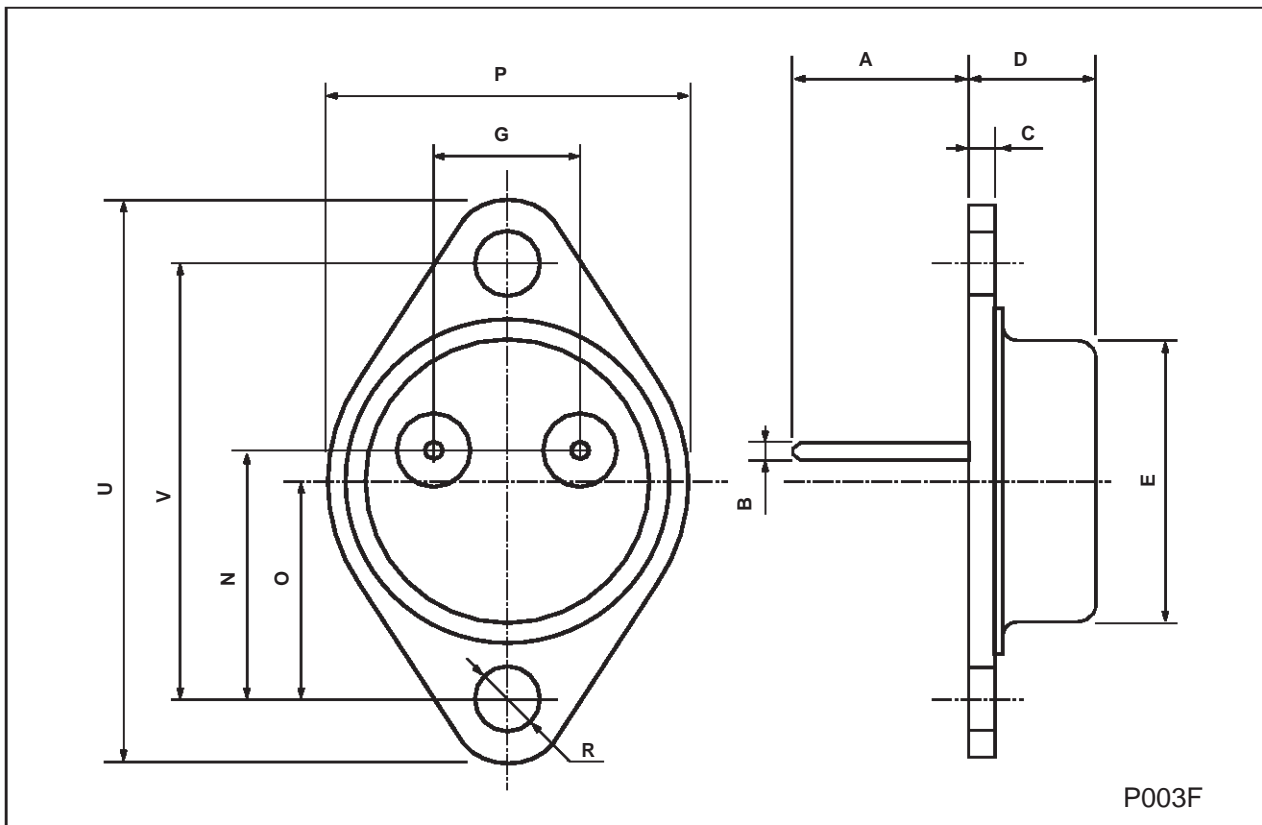


Figure 1: Inductive Load Switching Test Circuit.



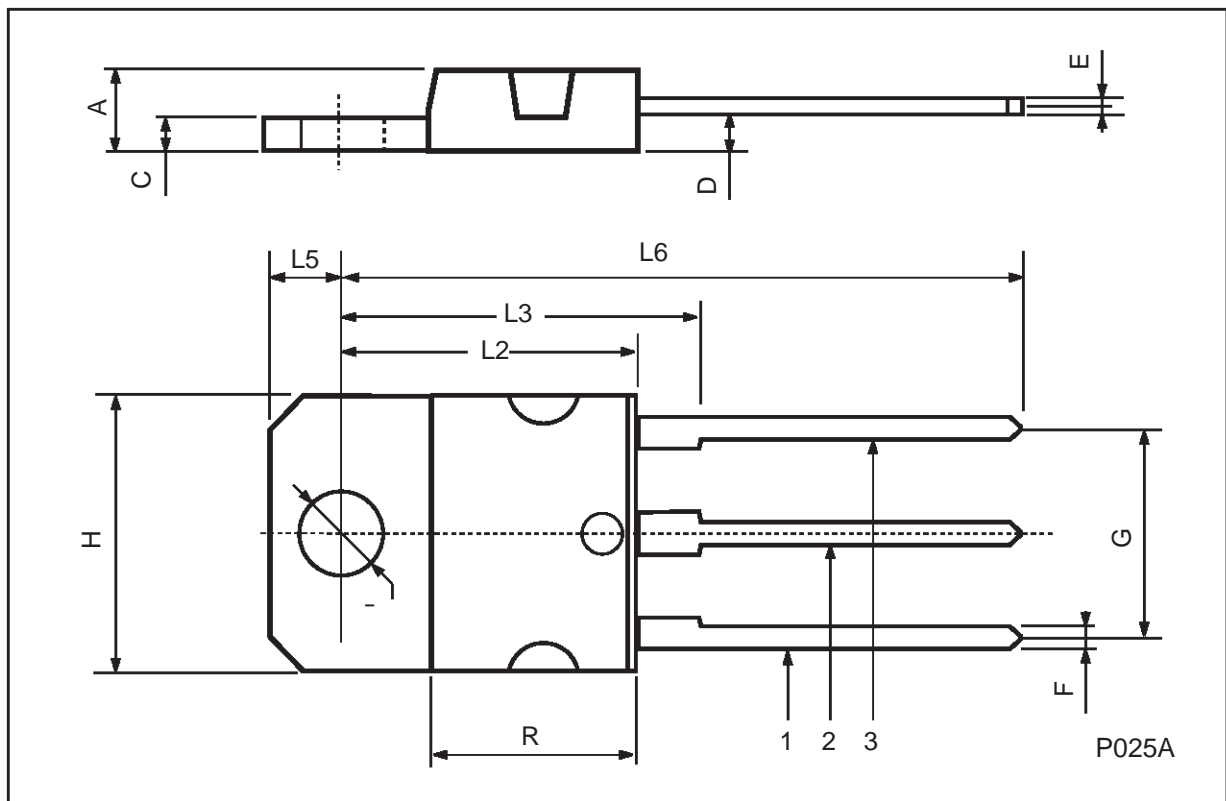
**TO-3 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	11.00		13.10	0.433		0.516
B	0.97		1.15	0.038		0.045
C	1.50		1.65	0.059		0.065
D	8.32		8.92	0.327		0.351
E	19.00		20.00	0.748		0.787
G	10.70		11.10	0.421		0.437
N	16.50		17.20	0.649		0.677
P	25.00		26.00	0.984		1.023
R	4.00		4.09	0.157		0.161
U	38.50		39.30	1.515		1.547
V	30.00		30.30	1.187		1.193



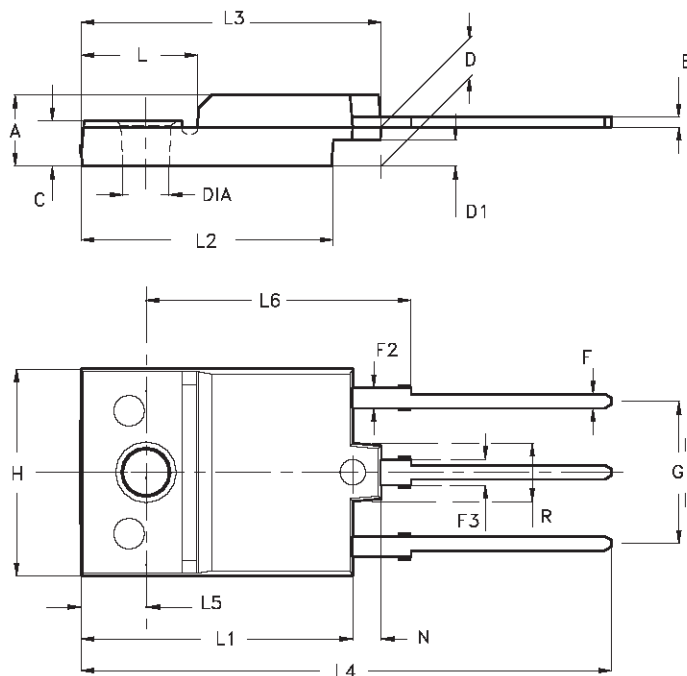
**TO-218 (SOT-93) MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.7		4.9	0.185		0.193
C	1.17		1.37	0.046		0.054
D		2.5			0.098	
E	0.5		0.78	0.019		0.030
F	1.1		1.3	0.043		0.051
G	10.8		11.1	0.425		0.437
H	14.7		15.2	0.578		0.598
L2	-		16.2	-		0.637
L3		18			0.708	
L5	3.95		4.15	0.155		0.163
L6		31			1.220	
R	-		12.2	-		0.480
Ø	4		4.1	0.157		0.161



**ISOWATT218 MECHANICAL DATA**

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	5.35		5.65	0.211		0.222
C	3.30		3.80	0.130		0.150
D	2.90		3.10	0.114		0.122
D1	1.88		2.08	0.074		0.082
E	0.75		0.95	0.030		0.037
F	1.05		1.25	0.041		0.049
F2	1.50		1.70	0.059		0.067
F3	1.90		2.10	0.075		0.083
G	10.80		11.20	0.425		0.441
H	15.80		16.20	0.622		0.638
L		9			0.354	
L1	20.80		21.20	0.819		0.835
L2	19.10		19.90	0.752		0.783
L3	22.80		23.60	0.898		0.929
L4	40.50		42.50	1.594		1.673
L5	4.85		5.25	0.191		0.207
L6	20.25		20.75	0.797		0.817
N	2.1		2.3	0.083		0.091
R		4.6			0.181	
DIA	3.5		3.7	0.138		0.146



- Weight : 4.9 g (typ.)
- Maximum Torque (applied to mounting flange) Recommended 0.8 Nm; Maximum: 1 Nm
- The side of the dissipator must be flat within 80 μm

P025C/A

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