BD239C

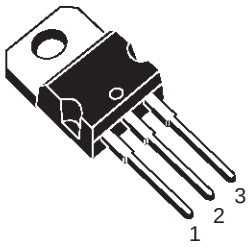
NPN SILICON POWER TRANSISTOR

- STMicroelectronics PREFERRED SALESTYPE

DESCRIPTION

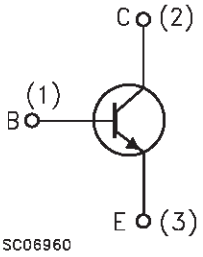
The BD239C is a silicon epitaxial-base NPN transistor in Jedec TO-220 plastic package.

It is inteded for use in medium power linear and switching applications.



TO-220

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CER}	Collector-Emitter Voltage (R_{BE} = 100Ω)	115	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)	100	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	5	V
I_C	Collector Current	2	A
I_{CM}	Collector Peak Current	4	A
I_B	Base Current	0.6	A
P_{tot}	Total Dissipation at $T_c \leq 25\ ^oC$	30	W
P_{tot}	Total Dissipation at $T_{amb} \leq 25\ ^oC$	2	W
T_{stg}	Storage Temperature	-65 to 150	^oC
T_j	Max. Operating Junction Temperature	150	^oC

THERMAL DATA

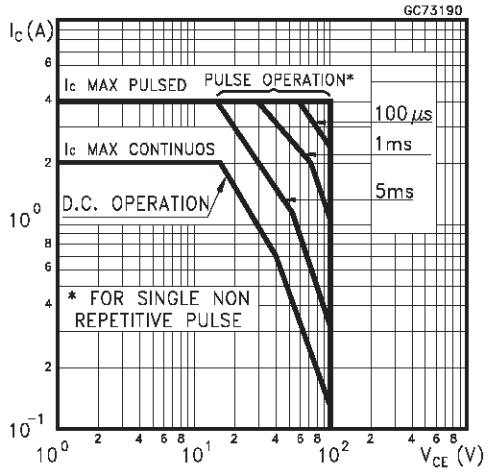
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	4.17	°C/W
$R_{thj\text{-}amb}$	Thermal Resistance Junction-ambient	Max	62.5	°C/W

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cut-off Current (V_{BE} = 0)	V_{CE} = 100 V			0.2	mA
I_{CEO}	Collector Cut-off Current (I_B = 0)	V_{CE} = 60 V			0.3	mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 5 V			1	mA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage	I_C = 30 mA	100			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 1 A I_B = 0.2 A			0.7	V
V_{BE}*	Base-Emitter Voltage	I_C = 1 A V_{CE} = 4 V			1.3	V
h_{FE}*	DC Current Gain	I_C = 0.2 A V_{CE} = 4 V I_C = 1 A V_{CE} = 4 V	40 15			
h_{fe}	Small Signal Current Gain	I_C = 0.2 A V_{CE} = 10 V f = 1MHz I_C = 0.2 A V_{CE} = 10 V f = 1KHz	3 20			

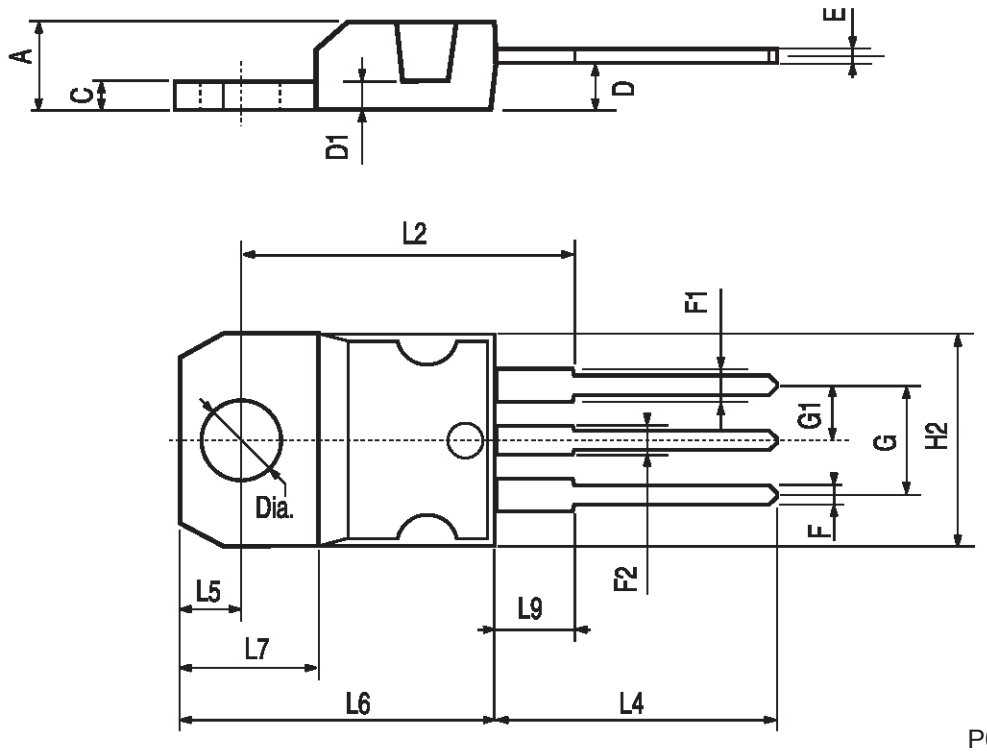
* Pulsed: Pulse duration = 300 µs, duty cycle ≤ 2 %

Safe Operating Areas



TO-220 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
C	1.23		1.32	0.048		0.051
D	2.40		2.72	0.094		0.107
D1		1.27			0.050	
E	0.49		0.70	0.019		0.027
F	0.61		0.88	0.024		0.034
F1	1.14		1.70	0.044		0.067
F2	1.14		1.70	0.044		0.067
G	4.95		5.15	0.194		0.203
G1	2.4		2.7	0.094		0.106
H2	10.0		10.40	0.393		0.409
L2		16.4			0.645	
L4	13.0		14.0	0.511		0.551
L5	2.65		2.95	0.104		0.116
L6	15.25		15.75	0.600		0.620
L7	6.2		6.6	0.244		0.260
L9	3.5		3.93	0.137		0.154
DIA.	3.75		3.85	0.147		0.151



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