

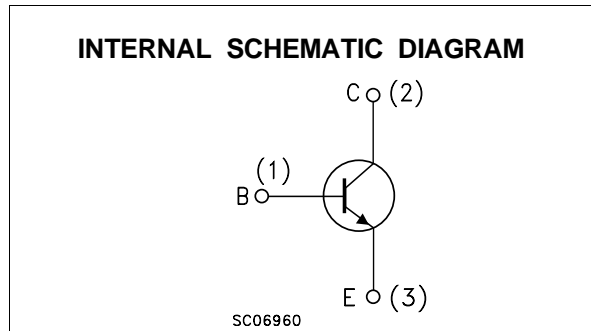
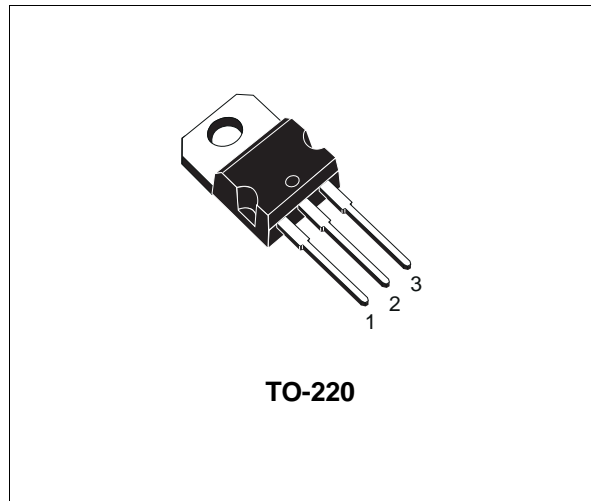
## NPN SILICON POWER TRANSISTOR

- STMicroelectronics PREFERRED SALESTYPE

### DESCRIPTION

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

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



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CER}$	Collector-Emitter Voltage ( $R_{BE} = 100\Omega$ )	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 $T_c \leq 25^\circ\text{C}$	30	W
$P_{tot}$	Total Dissipation at $T_{amb} \leq 25^\circ\text{C}$	2	W
$T_{stg}$	Storage Temperature	-65 to 150	$^\circ\text{C}$
$T_j$	Max. Operating Junction Temperature	150	$^\circ\text{C}$

# BD239C

## THERMAL DATA

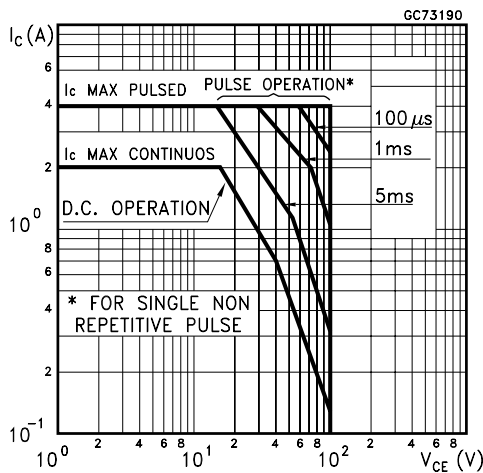
R <sub>thj-case</sub>	Thermal Resistance Junction-case	Max	4.17	°C/W
R <sub>thj-amb</sub>	Thermal Resistance Junction-ambient	Max	62.5	°C/W

## ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I <sub>CES</sub>	Collector Cut-off Current (V <sub>BE</sub> = 0)	V <sub>CE</sub> = 100 V			0.2	mA
I <sub>CEO</sub>	Collector Cut-off Current (I <sub>B</sub> = 0)	V <sub>CE</sub> = 60 V			0.3	mA
I <sub>EBO</sub>	Emitter Cut-off Current (I <sub>C</sub> = 0)	V <sub>EB</sub> = 5 V			1	mA
V <sub>CEO(sus)*</sub>	Collector-Emitter Sustaining Voltage	I <sub>C</sub> = 30 mA	100			V
V <sub>CE(sat)*</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 1 A    I <sub>B</sub> = 0.2 A			0.7	V
V <sub>BE*</sub>	Base-Emitter Voltage	I <sub>C</sub> = 1 A    V <sub>CE</sub> = 4 V			1.3	V
h <sub>FE*</sub>	DC Current Gain	I <sub>C</sub> = 0.2 A    V <sub>CE</sub> = 4 V I <sub>C</sub> = 1 A    V <sub>CE</sub> = 4 V	40 15			
h <sub>fe</sub>	Small Signal Current Gain	I <sub>C</sub> = 0.2 A    V <sub>CE</sub> = 10 V    f = 1MHz I <sub>C</sub> = 0.2 A    V <sub>CE</sub> = 10 V    f = 1KHz	3 20			

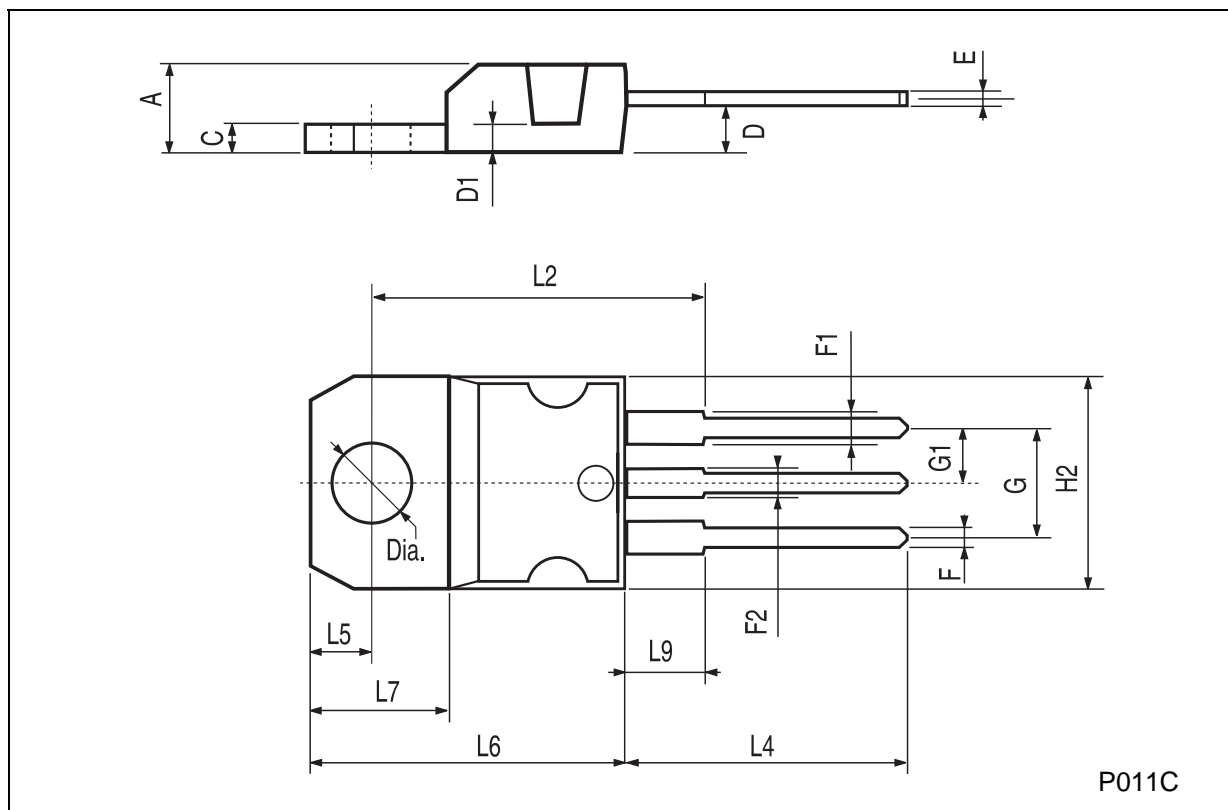
\* Pulsed: Pulse duration = 300 μs, duty cycle ≤ 2 %

## 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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