SGS-THOMSON MICROELECTRONICS

BDY90P

NPN SILICON POWER TRANSISTOR

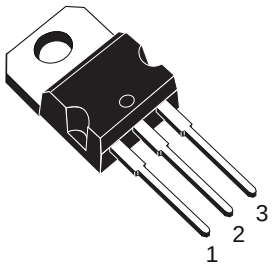
- NPN TRANSISTOR
- LOW COLLECTOR EMITTER SATURATION VOLTAGE
- FAST-SWITCHING SPEED

APPLICATION

- GENERAL PURPOSE SWITCHING APPLICATIONS
- GENERAL PURPOSE AMPLIFIERS
- DC CURRENT AND BATTERY OPERATED ELECTRONIC BALLAST

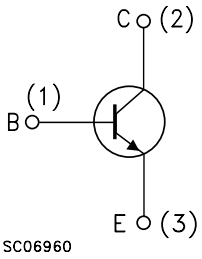
DESCRIPTION

The BDY90P is a silicon multiepitaxial planar NPN power transistors in TO-220 case intented for use in switching, linear applications and emergency lighting.



TO-220

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base Voltage (I_E = 0)	100	V
V_{CEV}	Collector-emitter Voltage (V_{BE} = -1.5V)	100	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	80	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	6	V
I_C	Collector Current	10	A
I_{CM}	Collector Peak Current (repetitive)	15	A
I_B	Base Current	2	A
P_{tot}	Total Dissipation at $T_c \leq 25\ ^oC$	60	W
T_{stg}	Storage Temperature	-65 to 175	^oC
T_j	Max. Operating Junction Temperature	150	^oC

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	2.08	$^oC/W$

ELECTRICAL CHARACTERISTICS (T_{case} = 25 ^oC unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current (I_E = 0)	V_{CE} =V_{CBO}			1	mA
I_{CEV}	Collector Cut-off Current (V_{BE} = -1.5V)	V_{CE} =V_{CEV} T_{case} = 150 ^oC V_{CE} =V_{CEV}			1 3	mA mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 6 V			1	mA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 100 mA	80			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 5 A I_B = 0.5 A I_C = 10 A I_B = 1 A			0.5 1.5	V V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = 5 A I_B = 0.5 A I_C = 10 A I_B = 1 A			1.2 1.5	V V
h_{FE}*	DC Current Gain	I_C = 1 A V_{CE} = 2 V I_C = 5 A V_{CE} = 5 V I_C = 10 A V_{CE} = 5 V	30 50 20			
f_t	Transition-Frequency	I_C = 0.5 A V_{CE} = 5 V f = 5 MHz		70		MHz
t_{on}	Turn-on Time	I_C = 5 A I_{B1} = 0.5 A V_{CC} = 30 V			0.35	µs
t_s	Storage Time	I_C = 5 A I_{B1} = -I_{B2} = 0.5 A V_{CC} = 30 V			1.3	µs
t_f	Fall Time				0.2	µs

* Pulsed: Pulse duration = 300 µs, duty cycle 1.5 %

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