

SPTECH Silicon NPN Darlington Power Transistor

TIP151

DESCRIPTION

- Collector-Emitter Breakdown Voltage-
: $V_{(BR)CEO} = 350V(\text{Min.})$
- Collector-Emitter Saturation Voltage-
: $V_{CE(sat)} = 2.0V(\text{Max.}) @ I_C = 5A$

APPLICATIONS

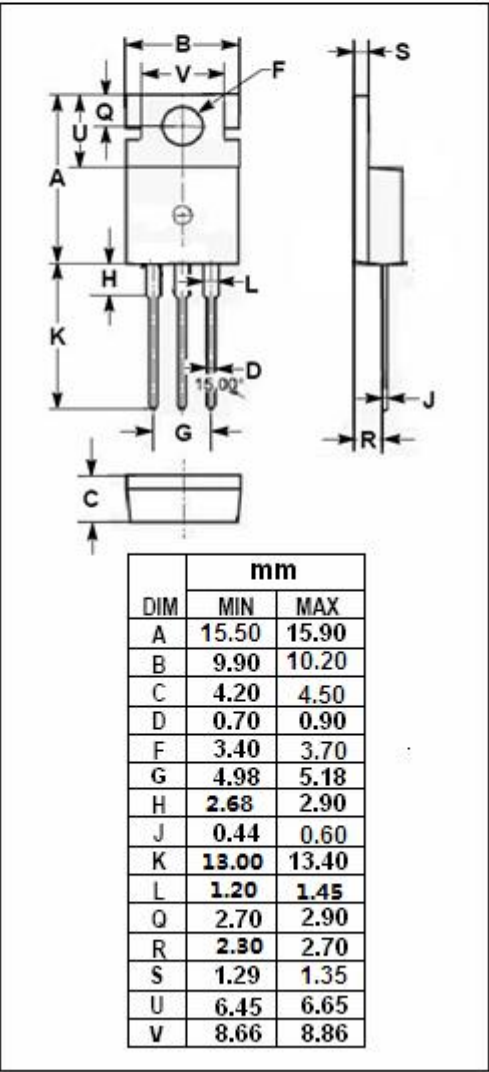
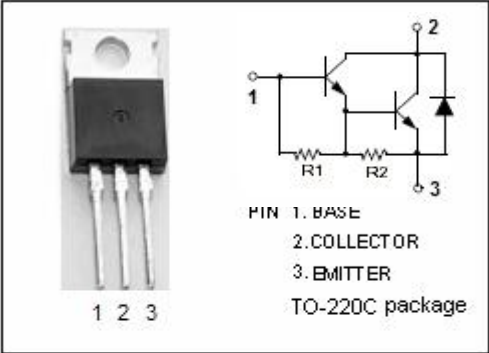
- Designed for use in automotive ignition, switching and motor control applications.

ABSOLUTE MAXIMUM RATINGS($T_a = 25^{\circ}C$)

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector-Base Voltage	350	V
V_{CEO}	Collector-Emitter Voltage	350	V
V_{EBO}	Emitter-Base Voltage	8	V
I_C	Collector Current-Continuous	7	A
I_{CM}	Collector Current-Peak	10	A
I_B	Base Current- Continuous	1.5	A
P_C	Collector Power Dissipation @ $T_C = 25^{\circ}C$	80	W
T_j	Junction Temperature	150	$^{\circ}C$
T_{stg}	Storage Temperature Range	-65~150	$^{\circ}C$

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j-c}$	Thermal Resistance, Junction to Case	1.56	$^{\circ}C/W$



ELECTRICAL CHARACTERISTICS

 $T_C=25^{\circ}\text{C}$ unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{mA}$, $I_B = 0$	350			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 1.0\text{mA}$, $I_E = 0$	350			V
$V_{CE(sat)-1}$	Collector-Emitter Saturation Voltage	$I_C = 1\text{A}$, $I_B = 10\text{mA}$			1.5	V
$V_{CE(sat)-2}$	Collector-Emitter Saturation Voltage	$I_C = 2\text{A}$, $I_B = 100\text{mA}$			1.5	V
$V_{CE(sat)-3}$	Collector-Emitter Saturation Voltage	$I_C = 5\text{A}$, $I_B = 250\text{mA}$			2.0	V
$V_{BE(sat)-1}$	Base-Emitter Saturation Voltage	$I_C = 2\text{A}$, $I_B = 100\text{mA}$			2.2	V
$V_{BE(sat)-2}$	Base-Emitter Saturation Voltage	$I_C = 5\text{A}$, $I_B = 250\text{mA}$			2.3	V
V_F	C-E Diode Forward Voltage	$I_F = 7\text{A}$			3.5	V
I_{CEO}	Collector Cutoff current	$V_{CE} = 350\text{V}$, $I_B = 0$			0.25	mA
I_{EBO}	Emitter Cutoff Current	$V_{EB} = 8\text{V}$; $I_C = 0$			15	mA
h_{FE-1}	DC Current Gain	$I_C = 2.5\text{A}$; $V_{CE} = 5\text{V}$	150			
h_{FE-2}	DC Current Gain	$I_C = 5\text{A}$; $V_{CE} = 5\text{V}$	50			
h_{FE-3}	DC Current Gain	$I_C = 7\text{A}$; $V_{CE} = 5\text{V}$	15			
C_{OB}	Collector Output Capacitance	$I_E = 0$; $V_{CB} = 10\text{V}$; $f = 1\text{MHz}$			150	pF

Switching Times

t_d	Delay Time	$V_{CC} = 250\text{V}$, $I_C = 5.0\text{A}$, $I_{B1} = -I_{B2} = 250\text{mA}$; $t_p = 20\text{ }\mu\text{s}$ Duty Cycle $\leq 2\%$		0.03		μs
t_r	Rise Time			0.18		μs
t_{stg}	Storage Time			3.5		μs
t_f	Fall Time			1.6		μs