

SPTECH Product Specification

SPTECH Silicon NPN Darlington Power Transistor

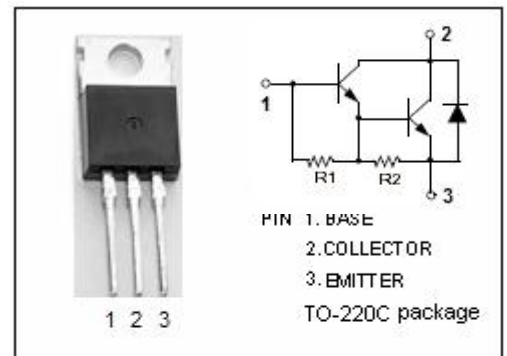
TIP151

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.

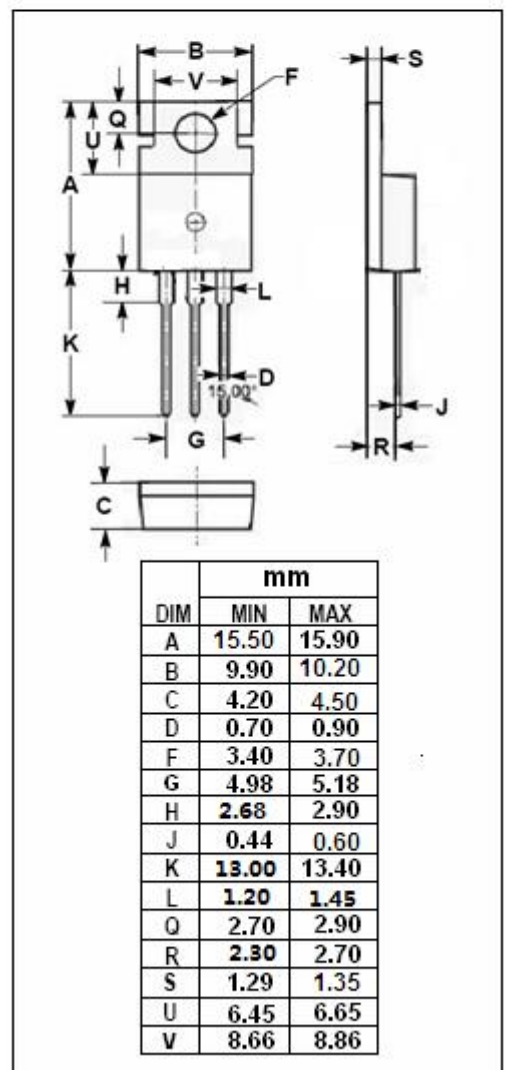


ABSOLUTE MAXIMUM RATINGS($T_a=25^\circ\text{C}$)

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 @ $T_C=25^\circ\text{C}$	80	W
T_j	Junction Temperature	150	$^\circ\text{C}$
T_{stg}	Storage Temperature Range	-65~150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

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



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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	$V_{CC}=250\text{V}, I_C=5.0\text{A}, I_{B1}=-I_{B2}=250\text{mA}; t_p=20\mu\text{s}$ 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