

SPTECH Silicon NPN Darlington Power Transistor

TIP142

DESCRIPTION

- High DC Current Gain-
: $h_{FE} = 1000(\text{Min}) @ I_C = 5A$
- Collector-Emitter Sustaining Voltage-
: $V_{CEO(\text{SUS})} = 100V(\text{Min})$
- Complement to Type TIP147

APPLICATIONS

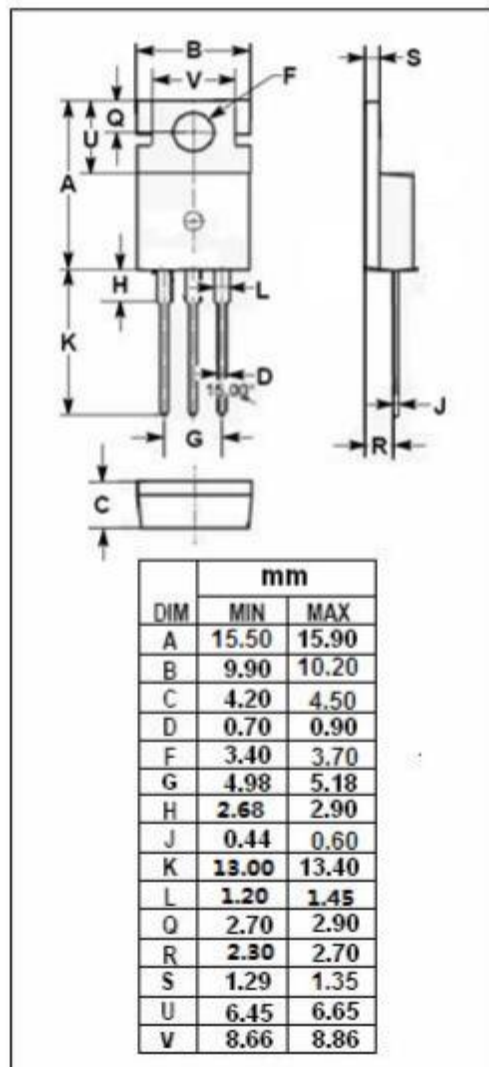
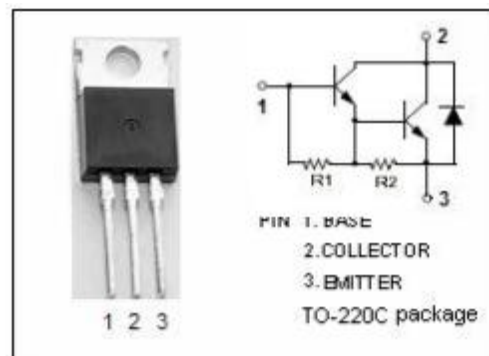
- Designed for general purpose amplifier and low speed switching applications.

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

SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector- Base Voltage	100	V
V_{CEO}	Collector- Emitter Voltage	100	V
V_{EBO}	Emitter- Base Voltage	5	V
I_C	Collector Current- Continuous	10	A
I_{CM}	Collector Current- Peak	15	A
I_B	Base Current- Continuous	0.5	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	-55~ 150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

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



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ELECTRICAL CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
$V_{CEQ(SUS)}$	Collector- Emitter Sustaining Voltage	$I_C = 30\text{mA}$, $I_B = 0$	100			V
$V_{CE(sat)-1}$	Collector- Emitter Saturation Voltage	$I_C = 5\text{A}$, $I_B = 10\text{mA}$			2.0	V
$V_{CE(sat)-2}$	Collector- Emitter Saturation Voltage	$I_C = 10\text{A}$, $I_B = 40\text{mA}$			3.0	V
$V_{BE(sat)}$	Base- Emitter Saturation Voltage	$I_C = 10\text{A}$, $I_B = 40\text{mA}$			3.5	V
$V_{BE(on)}$	Base- Emitter On Voltage	$I_C = 10\text{A}$; $V_{CE} = 4\text{V}$			3.0	V
I_{CBO}	Collector Cutoff current	$V_{CB} = 100\text{V}$, $I_E = 0$			1	mA
I_{CEO}	Collector Cutoff current	$V_{CE} = 50\text{V}$, $I_B = 0$			2	mA
I_{EBO}	Emitter Cutoff Current	$V_{EB} = 5\text{V}$; $I_C = 0$			2	mA
h_{FE-1}	DC Current Gain	$I_C = 5\text{A}$; $V_{CE} = 4\text{V}$	1000			
h_{FE-2}	DC Current Gain	$I_C = 10\text{A}$; $V_{CE} = 4\text{V}$	500			

Switching Times

t_d	Delay Time	$V_{CC} = 30\text{V}$, $I_C = 5.0\text{A}$, $I_{B1} = -I_{B2} = 20\text{mA}$; $t_p = 20\text{ }\mu\text{s}$ Duty Cycle $\leq 20\%$		0.15		μs
t_r	Rise Time			0.55		μs
t_{stg}	Storage Time			2.5		μs
t_f	Fall Time			2.5		μs