

**isc Silicon NPN Darlington Power Transistor**

**TIP142T**

**DESCRIPTION**

- High DC Current Gain-  
:  $h_{FE} = 1000(\text{Min}) @ I_C = 5A$
- Collector-Emitter Sustaining Voltage-  
:  $V_{CEO(SUS)} = 100V(\text{Min})$
- Complement to Type TIP147T

**APPLICATIONS**

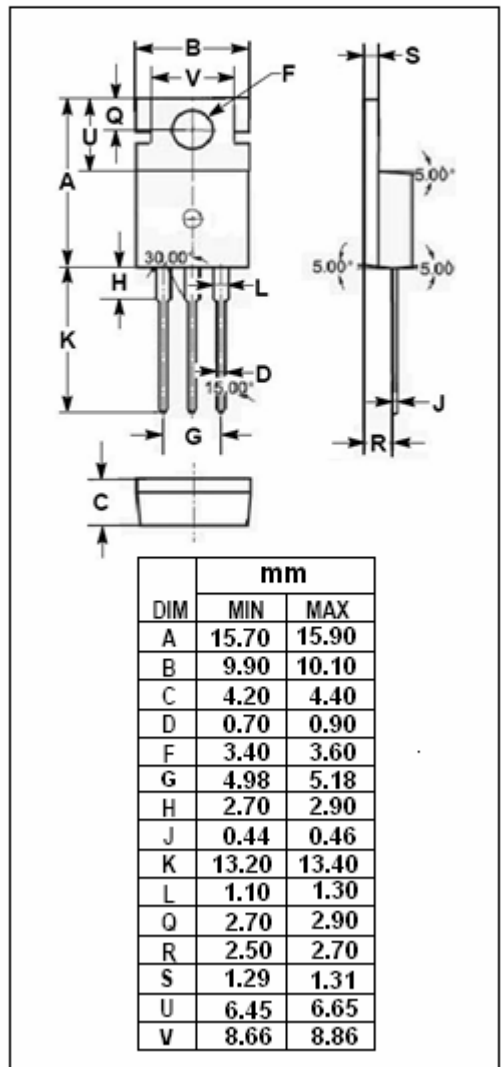
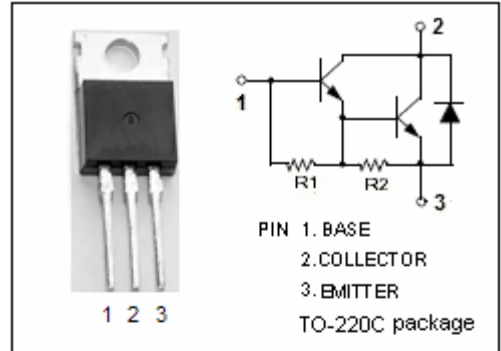
- Designed for general purpose amplifier and low speed switching applications.

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