

# Central<sup>TM</sup> Semiconductor Corp.

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Manufacturers of World Class Discrete Semiconductors

TIP140T TIP141T TIP142T NPN  
TIP145T TIP146T TIP147T PNP

SILICON POWER  
DARLINGTON TRANSISTORS

JEDEC TO-220 CASE

## DESCRIPTION

The CENTRAL SEMICONDUCTOR TIP140T, TIP145T series types are complementary silicon power darlington transistors manufactured by the epitaxial base process, designed for general purpose amplifier and low speed switching applications where high gain ( $h_{FE}$ ) is required.

## MAXIMUM RATINGS ( $T_C=25^\circ\text{C}$ )

	SYMBOL	TIP140T TIP145T	TIP141T TIP146T	TIP142T TIP147T	UNIT
Collector-Base Voltage	$V_{CB0}$	60	80	100	V
Collector-Emitter Voltage	$V_{CE0}$	60	80	100	V
Emitter-Base Voltage	$V_{EBO}$	5.0	5.0	5.0	V
Collector Current	$I_C$	10	10	10	A
Collector Current (Peak)	$I_{CM}$	15	15	15	A
Base Current	$I_B$	0.5	0.5	0.5	A
Power Dissipation	$P_D$	80	80	80	W
Operating and Storage Junction Temperature	$T_J, T_{stg}$		-65 to +150		$^\circ\text{C}$
Thermal Resistance	$\theta_{JC}$	1.56	1.56	1.56	$^\circ\text{C/W}$

## ELECTRICAL CHARACTERISTICS ( $T_C=25^\circ\text{C}$ )

SYMBOL	TEST CONDITIONS	TIP140T TIP145T		TIP141T TIP146T		TIP142T TIP147T		UNIT
		MIN	MAX	MIN	MAX	MIN	MAX	
$I_{CB0}$	$V_{CB}=\text{Rated } V_{CB0}$		1.0		1.0		1.0	mA
$I_{CE0}$	$V_{CE}=\frac{1}{2} \text{ Rated } V_{CE0}$		2.0		2.0		2.0	mA
$I_{EBO}$	$V_{BE}=5.0\text{V}$		2.0		2.0		2.0	mA
$BV_{CE0}$	$I_C=30\text{mA}$	60		80		100		V
$V_{CE}(\text{SAT})$	$I_C=5.0\text{A}, I_B=10\text{mA}$		2.0		2.0		2.0	V
$V_{CE}(\text{SAT})$	$I_C=10\text{A}, I_B=40\text{mA}$		3.0		3.0		3.0	V
$V_{BE}(\text{SAT})$	$I_C=10\text{A}, I_B=40\text{mA}$		3.5		3.5		3.5	V
$V_{BE}(\text{ON})$	$V_{CE}=4.0\text{V}, I_C=10\text{A}$		3.0		3.0		3.0	V
$h_{FE}$	$V_{CE}=4.0\text{V}, I_C=5.0\text{A}$	1000		1000		1000		
$h_{FE}$	$V_{CE}=4.0\text{V}, I_C=10\text{A}$	500		500		500		
$t_{ON}$	$V_{CC}=30\text{V}, I_C=5.0\text{A}, I_B=20\text{mA}, I_{B1}=I_{B2}$		0.7 TYP		0.7 TYP		0.7 TYP	$\mu\text{s}$
$t_{OFF}$	$V_{CC}=30\text{V}, I_C=5.0\text{A}, I_B=20\text{mA}, I_{B1}=I_{B2}$		5.0 TYP		5.0 TYP		5.0 TYP	$\mu\text{s}$