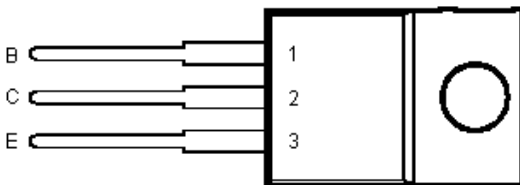


**Features:**

- 70W at 25°C case temperature.
- 8A continuous collector current.
- Minimum h_{FE} of 1000 at 4V, 4A.

TO-220 Package (Top View)

Pin 2 is in electrical contact with the mounting base.

Absolute maximum ratings at 25°C case temperature (unless otherwise noted)

Rating		Symbol	Value	Unit
Collector-base voltage ($I_E = 0$)	TIP137	V_{CBO}	-100	V
Collector-emitter voltage ($I_B = 0$)	TIP137	V_{CEO}		
Emitter-base voltage		V_{EBO}	-5	
Continuous collector current		I_C	-8	A
Peak collector current (note 1)		I_{CM}	-12	
Continuous base current		I_B	-0.3	
Continuous device dissipation at (or below) 25°C case temperature (note 2)		P_{tot}	70	W
Continuous device dissipation at (or below) 25°C free air temperature (note 3)			2	
Unclamped inductive load energy (note 4)		$1/2LI_C^2$	75	mJ
Operating junction temperature range		T_j	-65 to +150	°C
Storage temperature range		T_{stg}		
Lead temperature 3.2mm from case for 10 seconds		T_L		

NOTES: 1. This value applies for $t_p \leq 0.3\text{ms}$, duty cycle $\leq 10\%$.

2. Derate linearly to 150°C case temperature at the rate of 0.56W/°C.

3. Derate linearly to 150°C free air temperature at the rate of 16mW/°C.

4. This rating is based on the capability of the transistor to operate safely in a circuit of: $L = 20\text{mH}$, $I_{B(on)} = -5\text{mA}$, $R_{BE} = 100\Omega$, $V_{BE(off)} = 0$, $R_S = 0.1\Omega$, $V_{CC} = -20\text{V}$.

Electrical characteristics at 25°C case temperature

Parameter	Test Conditions	Minimum	Symbol	Maximum	Unit
Collector-emitter breakdown voltage	$I_C = -30\text{mA}$ $I_B = 0$ (Note 5) TIP137	-100	$V_{(BR)CEO}$	-	V
Collector-emitter cut-off current	$V_{CE} = -50\text{V}$ $I_B = 0$ TIP137	-	I_{CEO}	-0.5	mA
Collector cut-off current	$V_{CB} = -100\text{V}$ $I_E = 0$ TIP137 $V_{CB} = -100\text{V}$ $I_E = 0$ $T_C = 100^\circ\text{C}$ TIP137	-	I_{CBO}	-0.2 -1	
Emitter cut-off current	$V_{EB} = -5\text{V}$ $I_C = 0$	-	I_{EBO}	-5	
Forward current transfer ratio	$V_{CE} = -4\text{V}$ $I_C = -1\text{A}$ $V_{CE} = -4\text{V}$ $I_C = -4\text{A}$ (Notes 5 and 6)	500 1000	h_{FE}	15000	-
Collector-emitter saturation voltage	$I_B = -16\text{mA}$ $I_C = -4\text{A}$ $I_B = -30\text{mA}$ $I_C = -6\text{A}$ (Notes 5 and 6)	-	$V_{CE(sat)}$	-2 -3	V
Base-emitter voltage	$V_{CE} = -4\text{V}$ $I_C = -4\text{A}$ (Notes 5 and 6)	-	V_{BE}	-2.5	
Output capacitance	$V_{CB} = -10\text{V}$ $I_E = 0$	-	C_{obo}	200	pF
Parallel diode forward voltage	$I_E = -8\text{A}$ $I_B = 0$ (Notes 5 and 6)	-	V_{EC}	-3.5	V

NOTES: 5. These parameters must be measured using pulse techniques, $t_p = 300\mu\text{s}$, duty cycle $\leq 2\%$.

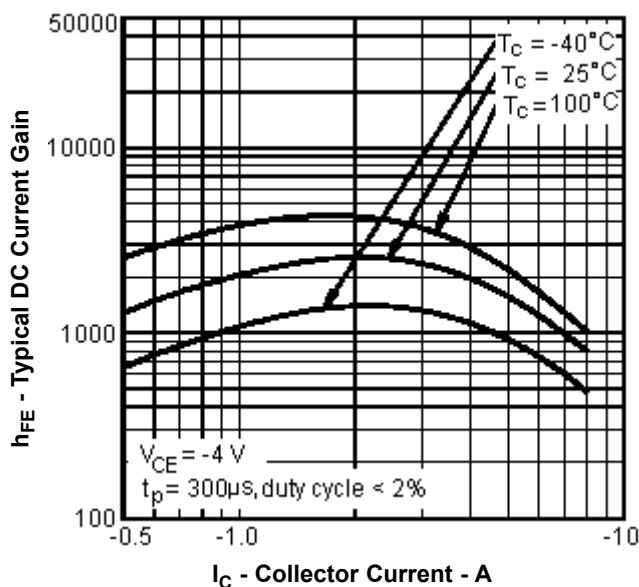
6. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

Thermal Characteristics

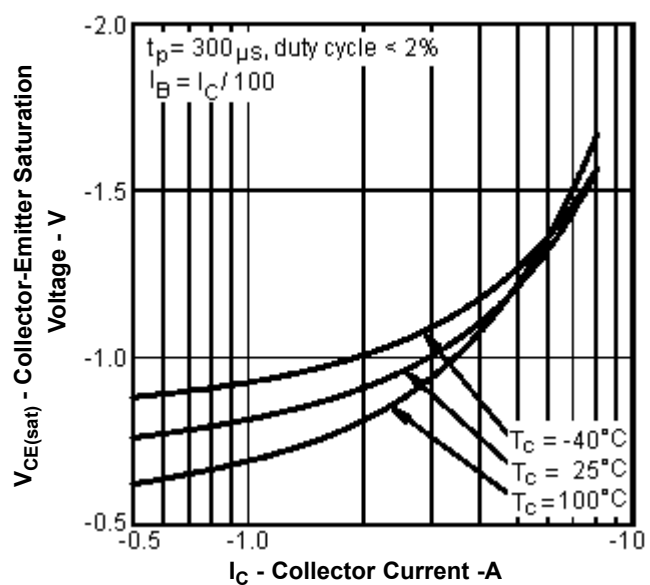
Parameter	Symbol	Minimum	Typical	Maximum	Unit
Junction to case thermal resistance	$R_{\theta JC}$	-	-	1.78	$^\circ\text{C/W}$
Junction to free air thermal resistance	$R_{\theta JA}$	-	-	62.5	

Typical Characteristics

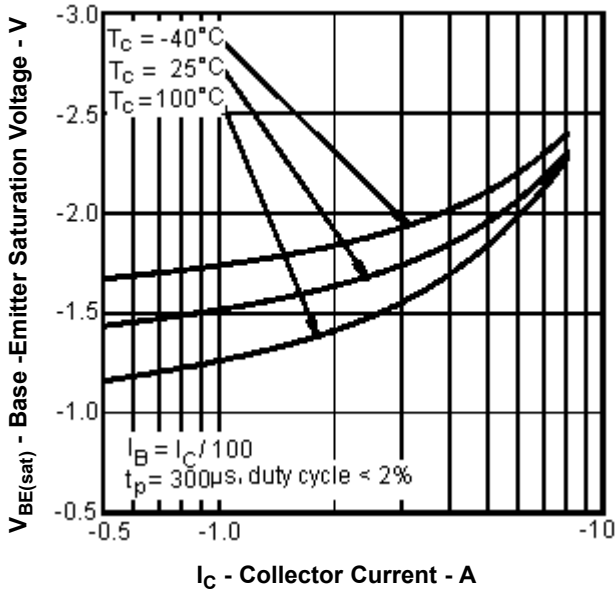
Typical DC Current Gain vs Collector Current



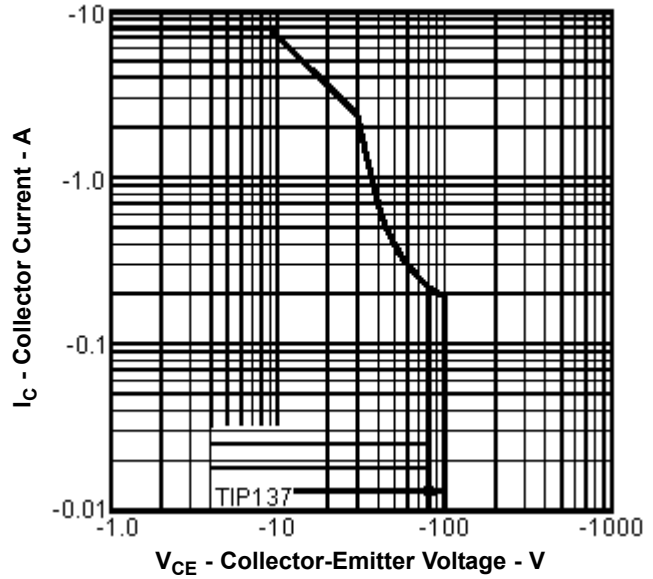
Collector-Emitter Saturation Voltage vs Collector Current



Base-Emitter Saturation Voltage vs Collector Current

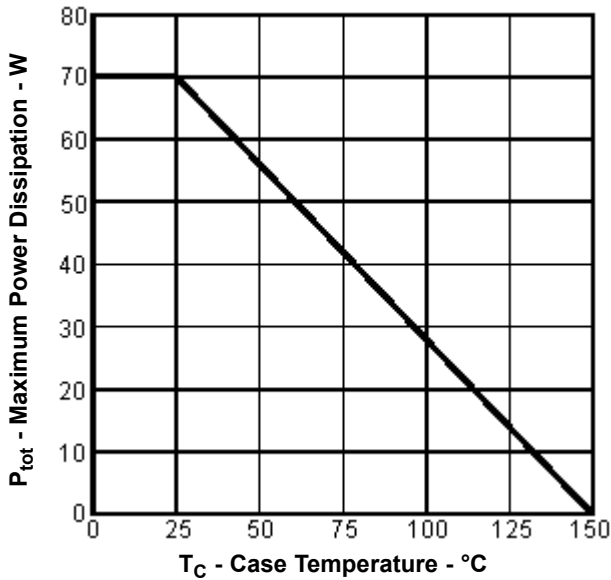


Maximum Safe Operating Regions
Maximum Forward-Bias Safe Operating Area



Thermal Information

Maximum Power Dissipation vs Case Temperature



Part Number Table

Description	Part Number
Darlington Transistor, TO-220	TIP137

Disclaimer This data sheet and its contents (the "Information") belong to the Premier Farnell Group (the "Group") or are licensed to it. No licence is granted for the use of it other than for information purposes in connection with the products to which it relates. No licence of any intellectual property rights is granted. The Information is subject to change without notice and replaces all data sheets previously supplied. The Information supplied is believed to be accurate but the Group assumes no responsibility for its accuracy or completeness, any error in or omission from it or for any use made of it. Users of this data sheet should check for themselves the Information and the suitability of the products for their purpose and not make any assumptions based on information included or omitted. Liability for loss or damage resulting from any reliance on the Information or use of it (including liability resulting from negligence or where the Group was aware of the possibility of such loss or damage arising) is excluded. This will not operate to limit or restrict the Group's liability for death or personal injury resulting from its negligence. SPC Multicomp is the registered trademark of the Group. © Premier Farnell plc 2008.