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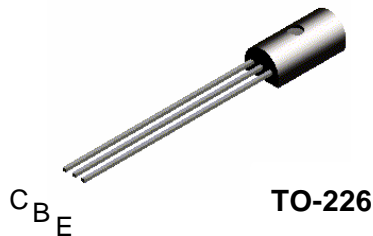


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**TN6725A**



**NPN Darlington Transistor**

This device is designed for applications requiring extremely high current gain at collector currents to 1A. Sourced from Process 05. See MPSA14 for characteristics.

**Absolute Maximum Ratings\***  $T_A = 25^\circ\text{C}$  unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CES}$	Collector-Emitter Voltage	50	V
$V_{CBO}$	Collector-Base Voltage	60	V
$V_{EBO}$	Emitter-Base Voltage	12	V
$I_C$	Collector Current - Continuous	1.2	A
$T_J, T_{stg}$	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

\*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 $^\circ\text{C}$ .
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

**Thermal Characteristics**  $T_A = 25^\circ\text{C}$  unless otherwise noted

Symbol	Characteristic	Max	Units
		TN6725A	
$P_D$	Total Device Dissipation Derate above 25 $^\circ\text{C}$	1	W
		8	mW/ $^\circ\text{C}$
$R_{\theta JC}$	Thermal Resistance, Junction to Case	50	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	125	$^\circ\text{C}/\text{W}$

**NPN Darlington Transistor**

(continued)

**Electrical Characteristics** $T_A = 25^\circ\text{C}$  unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
<b>OFF CHARACTERISTICS</b>					
$BV_{CES}$	Collector-Emitter Breakdown Voltage	$I_C = 1 \text{ mA}$	50		V
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C = 100 \mu\text{A}$	60		V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10 \mu\text{A}$	12		V
$I_{CBO}$	Collector Cutoff Current	$V_{CB} = 40 \text{ V}$		100	nA
$I_{EBO}$	Emitter Cutoff Current	$V_{EB} = 10 \text{ V}$		100	nA
<b>ON CHARACTERISTICS*</b>					
$h_{FE}$	DC Current Gain	$I_C = 200 \text{ mA}, V_{CE} = 5 \text{ V}$ $I_C = 500 \text{ mA}, V_{CE} = 5 \text{ V}$ $I_C = 1 \text{ A}, V_{CE} = 5 \text{ V}$	25,000 15,000 4000	40,000	-
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 200 \text{ mA}, I_B = 2 \text{ mA}$ $I_C = 1 \text{ A}, I_B = 2 \text{ mA}$		1.0 1.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 1 \text{ A}, I_B = 2 \text{ mA}$		2	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = 1 \text{ A}, V_{CE} = 5.0 \text{ V}$		2	V
<b>SMALL SIGNAL CHARACTERISTICS</b>					
$C_{cb}$	Output Capacitance	$V_{CB} = 10 \text{ V}, I_E = 0, f = 1\text{MHz}$		10	pF
$h_{fe}$	Small Signal Current Gain	$I_C = 200 \text{ mA}, V_{CE} = 5 \text{ V}, f=100\text{MHz}$	1	10	-

\*Pulse Test: Pulse Width  $\leq 300 \mu\text{s}$ , Duty Cycle  $\leq 1.0\%$

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