

**PNP EPITAXIAL SILICON DARLINGTON TRANSISTOR**

**MPSA64**

T-29-29

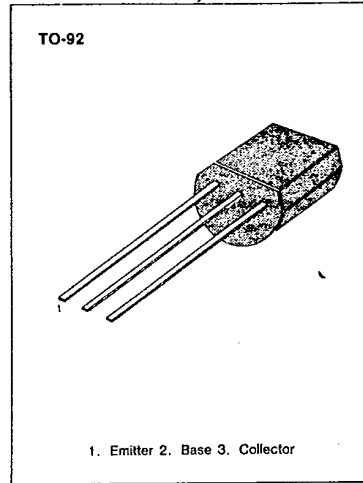
**DARLINGTON TRANSISTOR**

- Collector-Emitter Voltage:  $V_{CES} = 30V$
- Collector Dissipation:  $P_C (max) = 625mW$

**ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ C$ )**

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	$V_{CES}$	30	V
Collector-Base Voltage	$V_{CBO}$	30	V
Emitter-Base Voltage	$V_{EBO}$	10	V
Collector Current	$I_C$	500	mA
Collector Dissipation	$P_C$	625	mW
Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-55 ~ 150	$^\circ C$

\* Refer to MPSA62 for graphs



**ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ C$ )**

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	$BV_{CES}$	$I_C = 100\mu A, V_{BE} = 0$	30			V
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 30V, I_E = 0$			100	nA
Emitter Cut-off Current	$I_{EBO}$	$V_{BE} = 10V, I_C = 0$			100	nA
*DC Current Gain	$h_{FE}$	$I_C = 10mA, V_{CE} = 5V$	10K			
		$I_C = 100mA, V_{CE} = 5V$	20K			
*Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 100mA, I_B = 0.1mA$			1.5	V
*Base-Emitter On Voltage	$V_{BE(on)}$	$I_C = 100mA, V_{CE} = 5V$			2	V
Current Gain Bandwidth Product	$f_T$	$I_C = 100mA, V_{CE} = 5V$ $f = 100MHz$	125			MHz

\* Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$

**MPSA70**

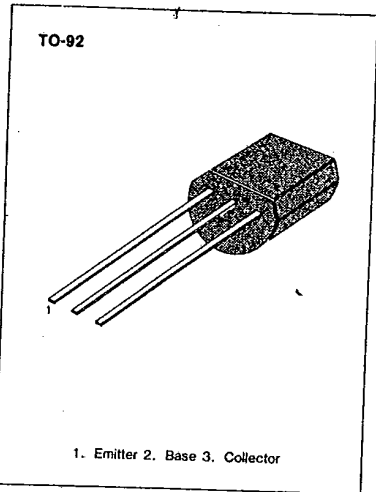
**PNP EPITAXIAL SILICON TRANSISTOR**

**AMPLIFIER TRANSISTOR**

- Collector-Emitter Voltage:  $V_{CE0} = 40V$
- Collector Dissipation:  $P_c (max) = 625mW$

**ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ C$ )**

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	$V_{CE0}$	40	V
Emitter-Base Voltage	$V_{EB0}$	4	V
Collector Current	$I_c$	100	mA
Collector Dissipation	$P_c$	625	mW
Junction Temperature	$T_j$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-55 ~ 150	$^\circ C$



**ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ C$ )**

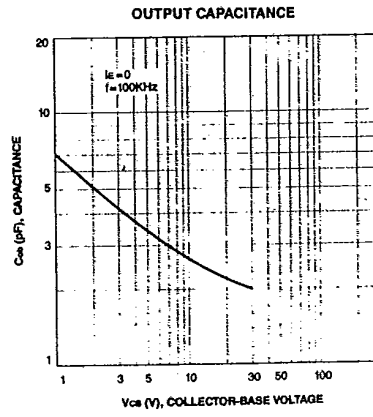
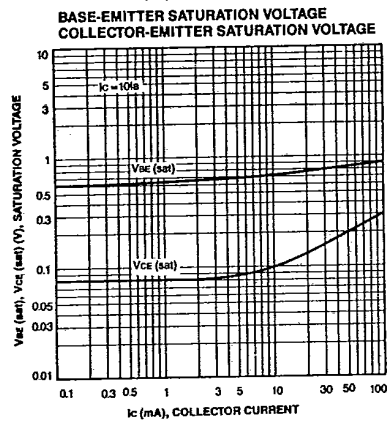
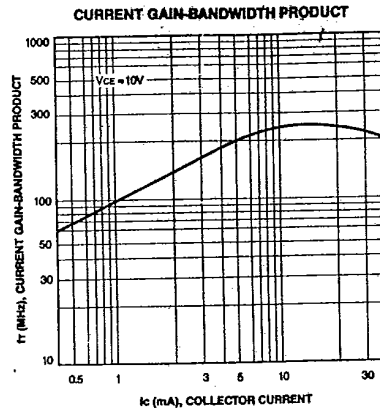
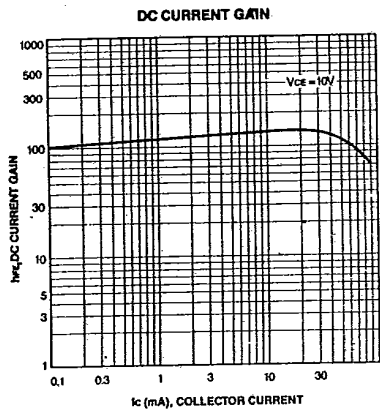
Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	$BV_{CE0}$	$I_c = 1mA, I_B = 0$	40			V
Emitter-Base Breakdown Voltage	$BV_{EB0}$	$I_E = 100\mu A, I_C = 0$	4			V
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 30V, I_E = 0$			100	nA
DC Current Gain	$h_{FE}$	$I_c = 5mA, V_{CE} = 10V$	40		400	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_c = 10mA, I_B = 1mA$			0.25	V
Current Gain Bandwidth Product	$f_T$	$I_c = 5mA, V_{CE} = 10V$ $f = 100MHz$	125			MHz
Output Capacitance	$C_{ob}$	$V_{CB} = 10V, I_E = 0$ $f = 100KHz$			4	pF

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PNP EPITAXIAL SILICON TRANSISTOR

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## MPSA75

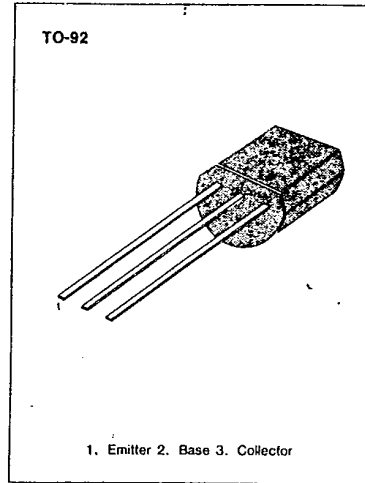
PNP EPITAXIAL  
T-29-29  
SILICON DARLINGTON TRANSISTOR

## DARLINGTON TRANSISTOR

- Collector-Emitter Voltage:  $V_{CES} = 40V$
- Collector Dissipation:  $P_C (\text{max}) = 625mW$

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

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	$V_{CES}$	40	V
Emitter-Base Voltage	$V_{EBO}$	10	V
Collector Current	$I_C$	500	mA
Collector Dissipation	$P_C$	625	mW
Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-55 - 150	$^\circ C$

ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ C$ )

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	$BV_{CES}$	$I_C = 100\mu A, V_{BE} = 0$	40			V
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C = 100\mu A, I_E = 0$	40			V
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 30V, I_E = 0$			100	nA
Emitter Cut-off Current	$I_{EBO}$	$V_{BE} = 10V, I_C = 0$			100	nA
Collector Cut-off Current	$I_{CES}$	$V_{CE} = 30V, V_{BE} = 0$			500	nA
DC Current Gain	$h_{FE}$	$I_C = 10mA, V_{CE} = 5V$	10K			
		$I_C = 100mA, V_{CE} = 5V$	10K			
Collector-Emitter Saturation Voltage	$V_{CE} (\text{sat})$	$I_C = 100mA, I_B = 0.1mA$			1.5	V
Base-Emitter On Voltage	$V_{BE} (\text{on})$	$I_C = 100mA, V_{CE} = 5V$			2	V

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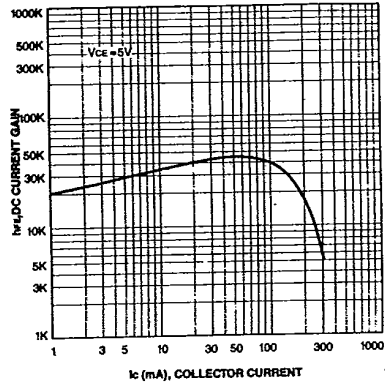
# MPSA75

SAMSUNG SEMICONDUCTOR INC

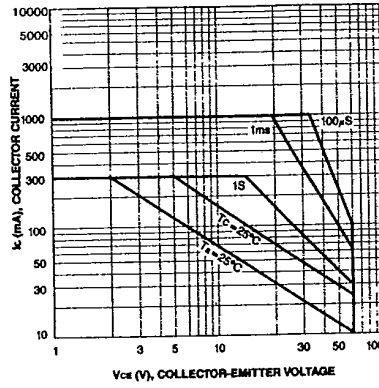
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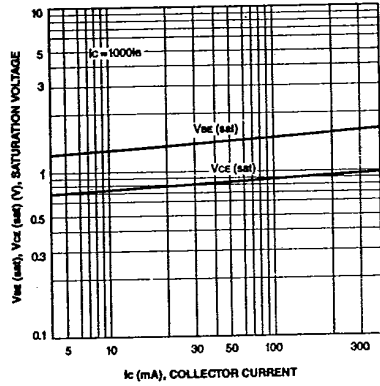
DC CURRENT GAIN



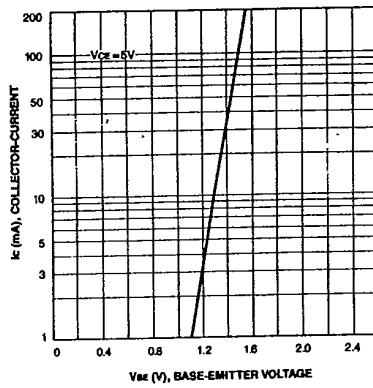
SAFE OPERATING AREA



BASE-EMITTER SATURATION VOLTAGE  
COLLECTOR-EMITTER SATURATION VOLTAGE



BASE-EMITTER ON VOLTAGE



**MPSA76**

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SILICON DARLINGTON TRANSISTOR**

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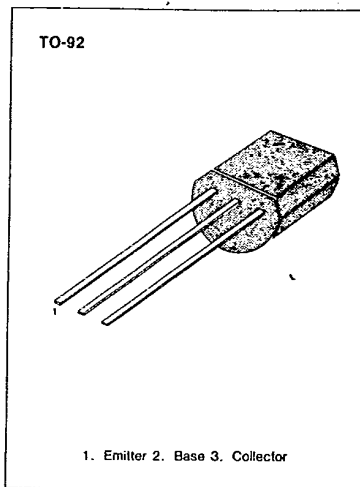
**DARLINGTON TRANSISTOR**

- Collector-Emitter Voltage:  $V_{CES} = 50V$
- Collector Dissipation:  $P_C (max) = 625mW$

**ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ C$ )**

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	$V_{CES}$	50	V
Emitter-Base Voltage	$V_{EBO}$	10	V
Collector Current	$I_C$	500	mA
Collector Dissipation	$P_C$	625	mW
Junction Temperature	$T_j$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-55 ~ 150	$^\circ C$

• Refer to MPSA75 for graphs



1. Emitter 2. Base 3. Collector

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**ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ C$ )**

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	$BV_{CES}$	$I_C = 100\mu A, V_{BE} = 0$	50			V
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C = 100\mu A, I_E = 0$	50			V
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 40V, I_E = 0$			100	nA
Emitter Cut-off Current	$I_{EBO}$	$V_{BE} = 10V, I_C = 0$			100	nA
Collector Cut-off Current	$I_{CES}$	$V_{CE} = 40V, V_{BE} = 0$			500	nA
DC Current Gain	$h_{FE}$	$I_C = 10mA, V_{CE} = 5V$	10K			
		$I_C = 100mA, V_{CE} = 5V$	10K			
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 100mA, I_B = 0.1mA$			1.5	V
Base-Emitter On Voltage	$V_{BE(on)}$	$I_C = 100mA, V_{CE} = 5V$			2	V

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SILICON DARLINGTON TRANSISTOR**

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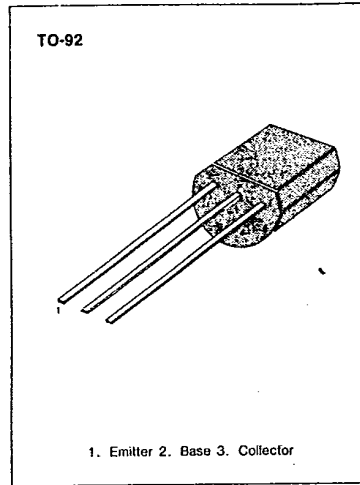
**DARLINGTON TRANSISTOR**

- Collector-Emitter Voltage:  $V_{CES} = 60V$
- Collector Dissipation:  $P_C (\text{max}) = 625mW$

**ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ C$ )**

Characteristic	Symbol	Rating	Unit
Collector-Emitter Voltage	$V_{CES}$	60	V
Emitter-Base Voltage	$V_{EBO}$	10	V
Collector Current	$I_C$	500	mA
Collector Dissipation	$P_C$	625	mW
Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-55 ~ 150	$^\circ C$

- Refer to MPSA75 for graphs

**ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ C$ )**

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage	$BV_{CES}$	$I_C = 100\mu A, V_{BE} = 0$	60			V
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C = 100\mu A, I_E = 0$	60			V
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 50V, I_E = 0$			100	nA
Emitter Cut-off Current	$I_{EBO}$	$V_{BE} = 10V, I_C = 0$			100	nA
Collector Cut-off Current	$I_{CES}$	$V_{CE} = 50V, V_{BE} = 0$			500	nA
DC Current Gain	$h_{FE}$	$I_C = 10mA, V_{CE} = 5V$	10K			
		$I_C = 100mA, V_{CE} = 5V$	10K			
Collector-Emitter Saturation Voltage	$V_{CE} (\text{sat})$	$I_C = 100mA, I_B = 0.1mA$			1.5	V
Base-Emitter On Voltage	$V_{BE} (\text{on})$	$I_C = 100mA, V_{CE} = 5V$			2	V



## MPSH17

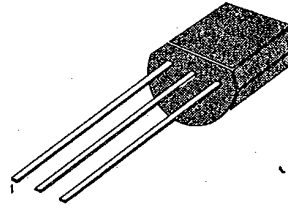
## NPN EPITAXIAL SILICON TRANSISTOR

## CATV TRANSISTOR

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

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CB0}$	20	V
Collector-Emitter Voltage	$V_{CE0}$	15	V
Emitter-Base Voltage	$V_{EB0}$	3.0	V
Collector Dissipation ( $T_a = 25^\circ\text{C}$ )	$P_C$	625	mW
Derate above $25^\circ\text{C}$		5.0	mW/ $^\circ\text{C}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	$-55 \sim 150$	$^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{th(j-a)}$	200	$^\circ\text{C/W}$

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1. Base 2. Emitter 3. Collector

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

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$BV_{CB0}$	$I_C = 100\mu\text{A}, I_E = 0$	20			V
Collector-Emitter Breakdown Voltage	$BV_{CE0}$	$I_C = 1\text{mA}, I_B = 0$	15			V
Emitter-Base Breakdown Voltage	$BV_{EB0}$	$I_E = 10\mu\text{A}, I_C = 0$	3.0			V
Collector Cutoff Current	$I_{CB0}$	$V_{CB} = 15\text{V}, I_E = 0$			100	nA
DC Current Gain	$h_{FE}$	$V_{CE} = 10\text{V}, I_C = 5\text{mA}$	25		250	
Collector Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10\text{mA}, I_B = 1\text{mA}$			0.5	V
Current Gain Bandwidth Product	$f_T$	$V_{CE} = 10\text{V}, I_C = 5\text{mA}$ $f = 100\text{MHz}$	800			MHz
Collector-Base Capacitance	$C_{cb}$	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	0.3		0.9	pF
Small Signal Current Gain	$h_{fe}$	$V_{CE} = 10\text{V}, I_C = 5\text{mA}$ $f = 1\text{KHz}$	30			
Noise Figure	NF	$V_{CC} = 12\text{V}, I_C = 5\text{mA}$ $R_S = 50\Omega, f = 200\text{MHz}$			6.0	dB
Amplifier Power Gain	$G_{pe}$	$V_{CC} = 12\text{V}, I_C = 5\text{mA}$ $R_S = 50\Omega, f = 200\text{MHz}$		24		dB

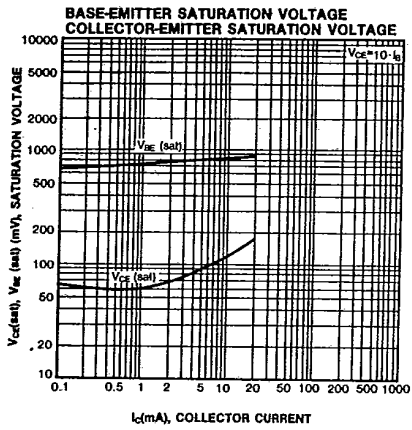
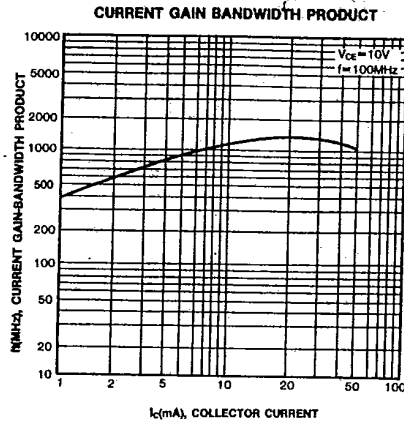
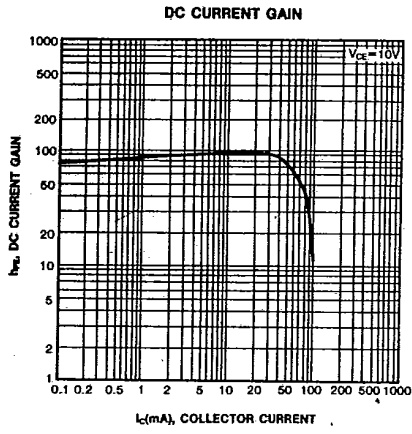




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# NPN EPITAXIAL SILICON TRANSISTOR

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