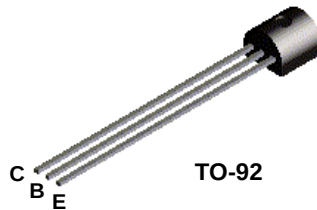
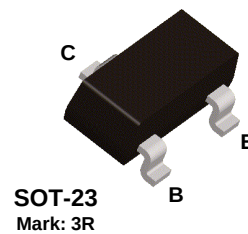


2N5771



MMBT5771



PNP Switching Transistor

This device is designed for very high speed saturate switching at collector currents to 100 mA. Sourced from Process 65. See PN4258 for characteristics.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V _{CEO}	Collector-Emitter Voltage	15	V
V _{CBO}	Collector-Base Voltage	15	V
V _{EBO}	Emitter-Base Voltage	4.5	V
I _C	Collector Current - Continuous	200	mA
T _J , T _{stg}	Operating and Storage Junction Temperature Range	-55 to +150	°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 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max		Units
		2N5771	*MMBT5771	
P _D	Total Device Dissipation Derate above 25°C	350 2.8	225 1.8	mW mW/°C
R _{θJC}	Thermal Resistance, Junction to Case	125		°C/W
R _{θJA}	Thermal Resistance, Junction to Ambient	357	556	°C/W

*Device mounted on FR-4 PCB 1.6" X 1.6" X 0.06."

PNP Switching Transistor

(continued)

2N5771 / MMBT5771

Electrical Characteristics

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
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OFF CHARACTERISTICS

$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	$I_C = 3.0 \text{ mA}, I_B = 0$	15		V
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage	$I_C = 100 \mu\text{A}, V_{BE} = 0$	15		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100 \mu\text{A}, I_E = 0$	15		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 100 \mu\text{A}, I_C = 0$	4.5		V
I_{CBO}	Collector Cutoff Current	$V_{CB} = 8.0 \text{ V}, I_E = 0$		10	nA
I_{CES}	Collector Cutoff Current	$V_{CE} = 8.0 \text{ V}, V_{BE} = 0$ $V_{CE} = 8.0 \text{ V}, V_{BE} = 0, T_A = 125^\circ\text{C}$		10 5.0	nA μA
I_{EBO}	Emitter Cutoff Current	$V_{EB} = 4.5 \text{ V}, I_C = 0$		1.0	μA

ON CHARACTERISTICS*

h_{FE}	DC Current Gain	$I_C = 1.0 \text{ mA}, V_{CE} = 0.5 \text{ V}$ $I_C = 10 \text{ mA}, V_{CE} = 0.3 \text{ V}$ $I_C = 10 \text{ mA}, V_{CE} = 0.3 \text{ V}, T_A = -55^\circ\text{C}$ $I_C = 50 \text{ mA}, V_{CE} = 1.0 \text{ V}$	35 50 20 40	120	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 1.0 \text{ mA}, I_B = 0.1 \text{ mA}$ $I_C = 10 \text{ mA}, I_B = 1.0 \text{ mA}$ $I_C = 50 \text{ mA}, I_B = 5.0 \text{ mA}$		0.15 0.18 0.6	V V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 1.0 \text{ mA}, I_B = 0.1 \text{ mA}$ $I_C = 10 \text{ mA}, I_B = 1.0 \text{ mA}$ $I_C = 50 \text{ mA}, I_B = 5.0 \text{ mA}$	0.75	0.8 0.95 1.5	V V V

SMALL SIGNAL CHARACTERISTICS

C_{cb}	Collector-Base Capacitance	$V_{CB} = 5.0 \text{ V}, I_E = 0,$ $f = 140 \text{ kHz}$		3.0	pF
C_{eb}	Emitter-Base Capacitance	$V_{BE} = 0.5 \text{ V}, I_C = 0,$ $f = 140 \text{ kHz}$		3.5	pF
h_{fe}	Small-Signal Current Gain	$I_C = 10 \text{ mA}, V_{CE} = 10 \text{ V},$ $f = 100 \text{ MHz}$	8.5		MHz

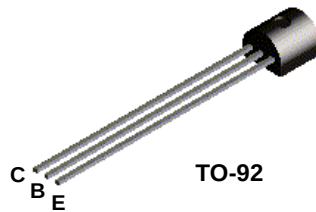
SWITCHING CHARACTERISTICS

t_s	Storage Time	$I_C = 10 \text{ mA}, V_{CC} = 1.5 \text{ V},$ $I_{B1} = I_{B2} = 1.0 \text{ mA}$		20	ns
t_{on}	Turn-On Time	$I_C = 10 \text{ mA}, V_{CC} = 1.5 \text{ V},$ $I_B = 1.0 \text{ mA}$		15	ns
t_{off}	Turn-Off Time	$I_C = 10 \text{ mA}, V_{CC} = 1.5 \text{ V},$ $I_{B1} = I_{B2} = 1.0 \text{ mA}$		20	ns

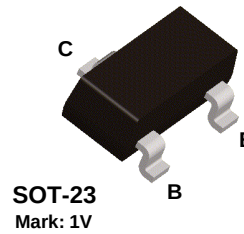
*Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$

N

2N6427



MMBT6427



NPN Darlington Transistor

This device is designed for applications requiring extremely high current gain at collector currents to 1.0 A. Sourced from Process 05. See MPSA14 for characteristics.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V _{CEO}	Collector-Emitter Voltage	40	V
V _{CBO}	Collector-Base Voltage	40	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	°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 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max		Units
		2N6427	*MMBT6427	
P _D	Total Device Dissipation Derate above 25°C	625 5.0	350 2.8	mW mW/°C
R _{θJC}	Thermal Resistance, Junction to Case	83.3		°C/W
R _{θJA}	Thermal Resistance, Junction to Ambient	200	357	°C/W

*Device mounted on FR-4 PCB 1.6" X 1.6" X 0.06."

NPN Darlington Transistor
(continued)

Electrical Characteristics TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
OFF CHARACTERISTICS					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	$I_C = 10\text{ mA}, I_B = 0$	40		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 100\text{ }\mu\text{A}, I_E = 0$	40		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\text{ }\mu\text{A}, I_C = 0$	12		V
I_{CEO}	Collector Cutoff Current	$V_{CE} = 25\text{ V}, I_B = 0$		1.0	μA
I_{CBO}	Collector Cutoff Current	$V_{CB} = 30\text{ V}, I_E = 0$		50	nA
I_{EBO}	Emitter Cutoff Current	$V_{EB} = 10\text{ V}, I_C = 0$		50	nA
ON CHARACTERISTICS					
h_{FE}	DC Current Gain*	$I_C = 10\text{ mA}, V_{CE} = 5.0\text{ V}$ $I_C = 100\text{ mA}, V_{CE} = 5.0\text{ V}$ $I_C = 500\text{ mA}, V_{CE} = 5.0\text{ V}$	10,000 20,000 14,000	100,000 200,000 140,000	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 50\text{ mA}, I_B = 0.5\text{ mA}$ $I_C = 500\text{ mA}, I_B = 0.5\text{ mA}$		1.2 1.5	V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 500\text{ mA}, I_B = 0.5\text{ mA}$		2.0	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = 50\text{ mA}, V_{CE} = 5.0\text{ V}$		1.75	V
SMALL SIGNAL CHARACTERISTICS					
C_{obo}	Output Capacitance	$V_{CB} = 10\text{ V}, I_E = 0,$ $f = 1.0\text{ MHz}$		7.0	pF
C_{ibo}	Input Capacitance	$V_{BE} = 1.0\text{ V}, I_C = 0,$ $f = 1.0\text{ MHz}$		15	pF

*Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2.0\%$