

# **NPN** Transistor

This device is designed for high current, low impedance line driver applications. Sourced from Process 26.

## Absolute Maximum Ratings TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V <sub>CEO</sub>	Collector-Emitter Voltage	40	V
V <sub>CBO</sub>	Collector-Base Voltage	60	V
V <sub>EBO</sub>	Emitter-Base Voltage	6.0	V
I <sub>C</sub>	Collector Current - Continuous	1.2	A
T <sub>J</sub> , T <sub>stg</sub>	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	Мах	Units
	-	MPSW3725	
PD	Total Device Dissipation	1.0	W
	Derate above 25°C	8.0	mW/∘C
$R_{\theta JC}$	Thermal Resistance, Junction to Case	125	°C/W
$R_{\theta J A}$	Thermal Resistance, Junction to Ambient	50	°C/W

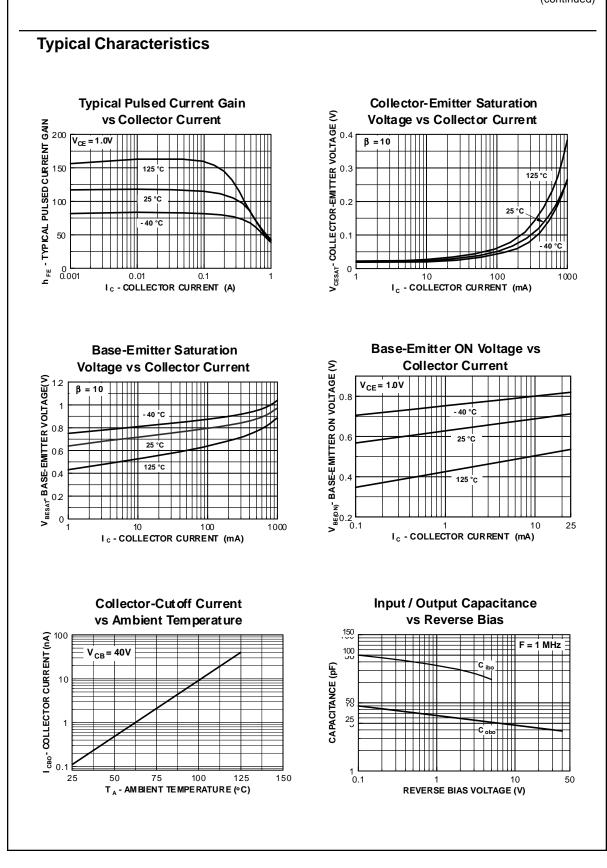
OFF CHARACTERISTICS $V_{(BR)CE0}$ Collector-Emitter Breakdown         Ic = 10 mA, I <sub>B</sub> = 0         40         V $V_{(BR)CES}$ Collector-Emitter Breakdown         Ic = 10 µA, V <sub>BE</sub> = 0         60         V $V_{(BR)CE0}$ Collector-Emitter Breakdown Voltage         Ic = 10 µA, I <sub>CE</sub> = 0         60         V $V_{(BR)CE0}$ Collector-Base Breakdown Voltage         Ic = 10 µA, I <sub>CE</sub> = 0         60         V $V_{(BR)CE0}$ Collector Cutoff Current         VcB = 50 V, I <sub>E</sub> = 0         60         10 $V_{(BR)CE0}$ Collector Cutoff Current         VcB = 50 V, I <sub>E</sub> = 0, T <sub>A</sub> = 100°C         10         10 $V_{CB} = 50 V, IE = 0, TA = 10.V         60         10         10         10         10           ON CHARACTERISTICS*         Ic = 10 mA, VCE = 1.0 V         30         10         10         10           V_{CE} = 50 ONA, V_{CE} = 1.0 V, I_{A} = -55°C         20         10   $	ansisto (continued	NPN Transis								
OFF CHARACTERISTICS           V(BR)CED         Collector-Emitter Breakdown         Ic = 10 mA, I <sub>B</sub> = 0         40         0           V(BR)CES         Collector-Emitter Breakdown         Ic = 10 $\mu$ A, V <sub>BE</sub> = 0         60         0           V(BR)CED         Collector-Emitter Breakdown Voltage         Ic = 10 $\mu$ A, V <sub>BE</sub> = 0         60         0           V(BR)CED         Collector-Base Breakdown Voltage         Ic = 10 $\mu$ A, Ic = 0         6.0         0           V(BR)CED         Collector Cutoff Current         VcB = 50 V, IE = 0         60         10           VCB         Collector Cutoff Current         VcB = 50 V, IE = 0, TA = 100°C         10           VCB         Collector Cutoff Current         VcB = 1.0 V         30         10           VCB = 50 V, IE = 0, TA = 100°C         30         18         10         10           VCB = 50 V, IE = 0, TA = 100°C         30         10         10         10           VCB = 50 V, IE = 0, TA = 10 V         30         10         10         10           VCB = 50 V, IE = 0, TA = 100°C         30         10         10         10         10           VCB = 50 V, IE = 0, TA = 10 MA, VCE = 1.0 V         30         10         10         10         10         10         10										
Voltage*         Voltage         Voltage         O         O         O         O           V(BR)CES         Collector-Emitter Breakdown Voltage         I <sub>C</sub> = 10 $\mu$ A, V <sub>BE</sub> = 0         60         V(BR)CEO         Collector-Emitter Breakdown Voltage         I <sub>L</sub> = 10 $\mu$ A, I <sub>C</sub> = 0         60         V(BR)CEO         Collector-Base Breakdown Voltage         I <sub>L</sub> = 10 $\mu$ A, I <sub>C</sub> = 0         60         V(BR)CEO         Collector-Cutoff Current         V <sub>CB</sub> = 50 V, I <sub>E</sub> = 0         60         100           V <sub>CBD</sub> Collector Cutoff Current         V <sub>CB</sub> = 50 V, I <sub>E</sub> = 0, T <sub>A</sub> = 100°C         100	x Units	Max	Тур	Min	Test Conditions	Parameter	Symbol			
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$						RACTERISTICS	OFF CHAF			
	V			40	$I_{\rm C} = 10$ mA, $I_{\rm B} = 0$	Collector-Emitter Breakdown				
	V			60	$I_{C} = 10 \ \mu A, \ V_{BE} = 0$	Collector-Emitter Breakdown	V <sub>(BR)CES</sub>			
	V			60	$I_{\rm C} = 100 \ \mu \text{A}, \ I_{\rm CE} = 0$	Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>			
V <sub>CB</sub> = 50 V, I <sub>E</sub> = 0, T <sub>A</sub> = 100°C         10           ON CHARACTERISTICS*         I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 1.0 V         30         18           h <sub>FE</sub> DC Current Gain         I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 1.0 V         60         18           I <sub>C</sub> = 100 mA, V <sub>CE</sub> = 1.0 V, T <sub>A</sub> = -55°C         30         16         100 mA, V <sub>CE</sub> = 1.0 V         40           I <sub>C</sub> = 500 mA, V <sub>CE</sub> = 1.0 V, T <sub>A</sub> = -55°C         20         12         500 mA, V <sub>CE</sub> = 1.0 V         40           I <sub>C</sub> = 500 mA, V <sub>CE</sub> = 1.0 V, T <sub>A</sub> = -55°C         20         12         500 mA, V <sub>CE</sub> = 1.0 V         20         12           V <sub>CE</sub> (sat)         Collector-Emitter Saturation Voltage         I <sub>C</sub> = 10 mA, I <sub>B</sub> = 1.0 mA         0.2         25           V <sub>CE</sub> (sat)         Collector-Emitter Saturation Voltage         I <sub>C</sub> = 10 mA, I <sub>B</sub> = 10 mA         0.2           I <sub>C</sub> = 300 mA, I <sub>B</sub> = 30 mA         0.3         0.4         0.5           I <sub>C</sub> = 10 A, I <sub>B</sub> = 100 mA         0.3         0.4         0.5           I <sub>C</sub> = 10 A, I <sub>B</sub> = 10 mA         0.3         0.4         0.5         0.5           V <sub>BE</sub> (sat)         Base-Emitter Saturation Voltage         I <sub>C</sub> = 10 mA, I <sub>B</sub> = 10 mA         0.3         0.4           I <sub>C</sub> = 100 mA, I <sub>B</sub> = 10 mA         0.3         0.4         0.3         0.4         0.7	V			6.0	$I_{\rm E} = 10 \ \mu A, I_{\rm C} = 0$	Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>			
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	-	100 10			, -	Collector Cutoff Current	I <sub>CBO</sub>			
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$		180		30	$I_{C}$ =100mA, $V_{CE}$ =1.0V, $T_{A}$ =-55°C $I_{C}$ = 300 mA, $V_{CE}$ = 1.0 V					
$V_{CE(sat)} = \begin{bmatrix} c = 100 \text{ mA}, V_{CE} = 1.0 \text{ V} & 60 \\ I_{C} = 100 \text{ mA}, V_{CE} = 1.0 \text{ V} & 40 \\ I_{C} = 300 \text{ mA}, V_{CE} = 1.0 \text{ V} & 40 \\ I_{C} = 300 \text{ mA}, V_{CE} = 1.0 \text{ V} & 40 \\ I_{C} = 500 \text{ mA}, V_{CE} = 1.0 \text{ V} & 35 \\ I_{C} = 500 \text{ mA}, V_{CE} = 1.0 \text{ V} & 20 \\ I_{C} = 800 \text{ mA}, V_{CE} = 2.0 \text{ V} & 25 \\ \hline \\ V_{CE(sat)} = \begin{bmatrix} c = 10 \text{ mA}, I_{B} = 1.0 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} \\ I_{C} = 500 \text{ mA}, I_{B} = 50 \text{ mA} \\ I_{C} = 500 \text{ mA}, I_{B} = 50 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 50 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = $						ACTERISTICS*	ON CHAR			
$V_{CE(sat)} = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 &$					I <sub>C</sub> =100mA,V <sub>CE</sub> =1.0V,T <sub>A</sub> =-55°C					
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$				-						
$V_{CE(sat)} = \begin{bmatrix} I_{C} = 800 \text{ mA}, V_{CE} = 2.0 \text{ V} & 20 \\ I_{C} = 1.0 \text{ A}, V_{CE} = 5.0 \text{ V} & 25 \end{bmatrix}$ $V_{CE(sat)} = \begin{bmatrix} Collector-Emitter Saturation Voltage \\ I_{C} = 10 \text{ mA}, I_{B} = 1.0 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 10 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} \\ I_{C} = 500 \text{ mA}, I_{B} = 50 \text{ mA} \\ I_{C} = 500 \text{ mA}, I_{B} = 50 \text{ mA} \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} \\ I_{C} = 500 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 1.0 \text{ A}, I_{C} = 100 \text{ mA} \\ I_{C} = 1.0 \text{ A}, I_{C} = 100 \text{ mA} \\ I_{C} = 1.0 \text{ A}, I_{C} = 100 \text{ mA} \\ I_{C} = 1.0 \text{ A}, I_{C} = 100 \text$										
$V_{CE(sat)} \begin{bmatrix} Collector-Emitter Saturation Voltage \\ I_{C} = 10 \text{ mA}, I_{B} = 1.0 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 1.0 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 10 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} \\ I_{C} = 500 \text{ mA}, I_{B} = 50 \text{ mA} \\ I_{C} = 500 \text{ mA}, I_{B} = 50 \text{ mA} \\ I_{C} = 1.0 \text{ mA} \\ I_{C} = 1.0 \text{ mA} \\ I_{C} = 100 \text{ mA} \\ I_{C} =$				-						
$V_{BE(sat)} = \begin{bmatrix} I_{C} = 100 \text{ mA}, I_{B} = 10 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 50 \text{ mA} \\ I_{C} = 500 \text{ mA}, I_{B} = 50 \text{ mA} \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 100 \text{ mA} \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} \\ I_{C} = 1.0 \text{ mA}, I_{C} = 1.0 \text{ mA} \\ I_{C} =$				25						
$V_{BE(sat)} = Base-Emitter Saturation Voltage = I_{C} = 300 mA, I_{B} = 30 mA = 0.4 \\ I_{C} = 500 mA, I_{B} = 50 mA = 0.5 \\ I_{C} = 800 mA, I_{B} = 80 mA = 0.9 \\ I_{C} = 1.0 A, I_{B} = 100 mA = 0.9 \\ I_{C} = 100 mA, I_{B} = 1.0 mA = 0.7 \\ I_{C} = 100 mA, I_{B} = 10 mA = 0.8 \\ I_{C} = 300 mA, I_{B} = 30 mA = 0.7 \\ I_{C} = 100 mA, I_{B} = 10 mA = 0.8 \\ I_{C} = 300 mA, I_{B} = 30 mA = 0.7 \\ I_{C} = 500 mA, I_{B} = 30 mA = 0.7 \\ I_{C} = 100 mA, I_{B} = 10 mA = 0.8 \\ I_{C} = 100 mA, I_{B} = 10 mA = 0.8 \\ I_{C} = 100 mA, I_{B} = 10 mA = 0.8 \\ I_{C} = 100 mA, I_{B} = 100 mA = 0.8 \\ I_{C} = 100 mA, I_{B} = 100 mA = 0.8 \\ I_{C} = 1.0 A, I_{C} = 0.8 \\ I_{C} = 1.0 A, I_{C} = 0.8 \\ I_{C} = 0$	-	0.25				Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>			
$V_{BE(sat)} = Base-Emitter Saturation Voltage = I_{1}^{C} = 500 \text{ mA}, I_{B} = 50 \text{ mA} = 0.5 \\ I_{C} = 800 \text{ mA}, I_{B} = 80 \text{ mA} = 100 \text{ mA} = 0.9 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} = 0.9 \\ I_{C} = 100 \text{ mA}, I_{B} = 10 \text{ mA} = 0.7 \\ I_{C} = 100 \text{ mA}, I_{B} = 10 \text{ mA} = 0.8 \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} = 0.7 \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} = 0.7 \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} = 0.7 \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} = 0.7 \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} = 0.7 \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} = 0.7 \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} = 0.7 \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} = 0.7 \\ I_{C} = 100 \text{ mA}, I_{B} = 100 \text{ mA} = 0.7 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} = 0.7 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} = 0.7 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} = 0.7 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} = 0.7 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} = 0.7 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} = 0.7 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} = 0.7 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} = 0.7 \\ I_{C} = 0.7 \text{ mA}$										
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$		0.4								
$\begin{array}{c c} I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} & 0.9 \\ \hline I_{C} = 1.0 \text{ A}, I_{B} = 1.0 \text{ mA} & 0.9 \\ \hline V_{BE(sat)} & Base-Emitter Saturation Voltage & I_{C} = 10 \text{ mA}, I_{B} = 1.0 \text{ mA} & 0.7 \\ I_{C} = 100 \text{ mA}, I_{B} = 10 \text{ mA} & 0.8 \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} & 1.2 \\ I_{C} = 500 \text{ mA}, I_{B} = 50 \text{ mA} & 1.2 \\ I_{C} = 800 \text{ mA}, I_{B} = 80 \text{ mA} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{C} = 1.0 \text{ A}, I_{C} = 1.0 \text{ A} \\ I_{C} = 1.0 \text{ A}, I_{C} = 1.0 \text{ A} & 1.2 \\ I_{C} = 1.0 \text{ A}, I_{C} = 1.0 \text{ A} & 1.2 \\ I_{C} = 1.0 \text{ A} & I_{C} = 1.0 \text{ A} & I_{C} = 1.0 \text{ A} \\ I_{C} = 1.0 \text{ A} & I_{C} = 1.0 \text{ A} & I_{C} = 1.0 \text{ A} & I_{C} = 1.0 \text{ A} \\ I_{C} = 1.0 \text{ A} & I_{C} = 1.0 \text$		0.8								
$ V_{BE(sat)} \\ Base-Emitter Saturation Voltage \\ Base-Emitter Saturation Voltage \\ I_{C} = 10 \text{ mA}, I_{B} = 1.0 \text{ mA} \\ I_{C} = 100 \text{ mA}, I_{B} = 10 \text{ mA} \\ I_{C} = 300 \text{ mA}, I_{B} = 30 \text{ mA} \\ I_{C} = 500 \text{ mA}, I_{B} = 50 \text{ mA} \\ I_{C} = 800 \text{ mA}, I_{B} = 80 \text{ mA} \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} \\ I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA} \\ I_{C} = 1.0 \text{ mA} \\ I$		0.95								
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	6 V	0.76				Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>			
$I_{C} = 500 \text{ mA}, I_{B} = 50 \text{ mA}$ $I_{C} = 800 \text{ mA}, I_{B} = 80 \text{ mA}$ $I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA}$ $1.1$ SMALL SIGNAL CHARACTERISTICS	6 V	0.86			$I_{\rm C} = 100 \text{ mA}, I_{\rm B} = 10 \text{ mA}$		()			
I <sub>C</sub> = 800 mA, I <sub>B</sub> = 80 mA         1.5           I <sub>C</sub> = 1.0 A, I <sub>B</sub> = 100 mA         1.5           SMALL SIGNAL CHARACTERISTICS         1.5		1.1								
I <sub>C</sub> = 1.0 A, I <sub>B</sub> = 100 mA     1.3       SMALL SIGNAL CHARACTERISTICS     1.3		1.2			-					
SMALL SIGNAL CHARACTERISTICS		1.5								
	7 V	1.7			$I_{\rm C} = 1.0$ A, $I_{\rm B} = 100$ mA					
$T_T$   Current Gain - Bandwidth Product   $I_C = 50$ mA, $V_{CE} = 10$ V,   250	L			050						
f = 100 MHz	MHz			250	f = 100 MHz					
f = 1.0 MHz	P.	25			f = 1.0 MHz		C <sub>obo</sub>			
C <sub>ibo</sub> Input Capacitance $V_{EB} = 0.5 V, I_C = 0,$ 100 f = 1.0 MHz	D pF	100				Input Capacitance	Cibo			

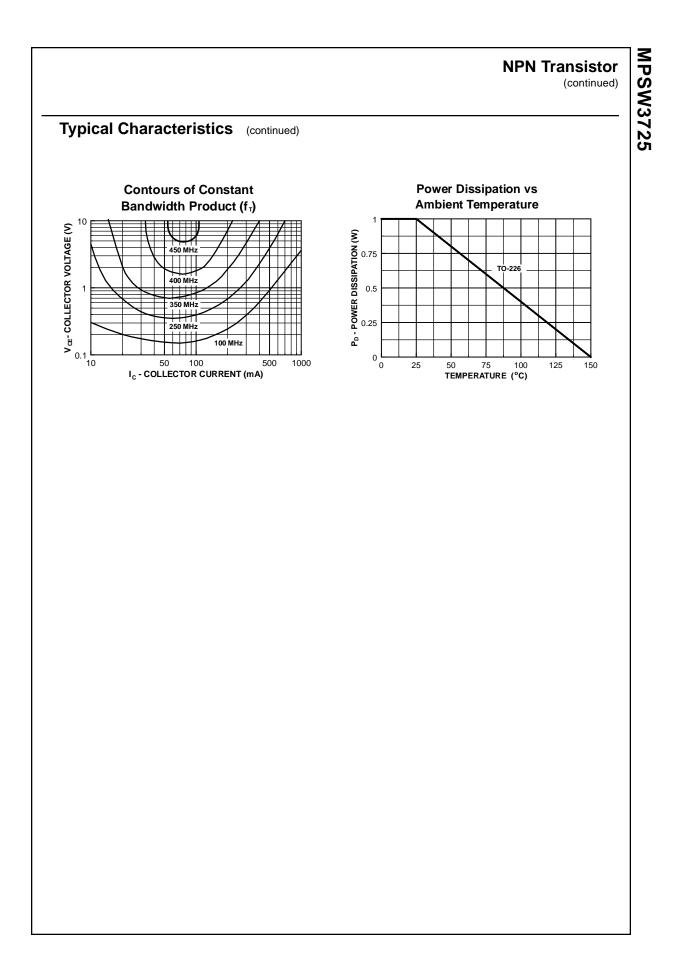
## SWITCHING CHARACTERISTICS

t <sub>on</sub>	Turn-on Time	$V_{CC} = 30 \text{ V}, \text{ V}_{BE} = 3.8 \text{ V},$	22	ns
t <sub>d</sub>	Delay Time	I <sub>C</sub> = 500 mA, I <sub>B1</sub> = 50 mA	10	ns
tr	Rise Time		12	ns
toff	Turn-off Time	$V_{CC} = 30 \text{ V}, \text{ I}_{C} = 500 \text{mA}$	250	ns
ts	Storage Time	$I_{B1} = I_{B2} = 50 \text{ mA}$	235	ns
t <sub>f</sub>	Fall Time		15	ns

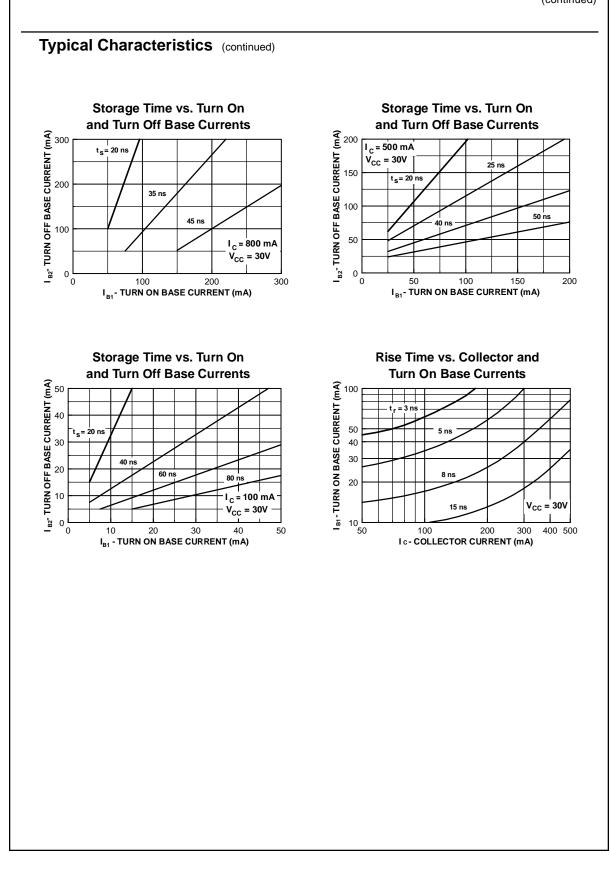
\*Pulse Test: Pulse Width  $\leq$  300  $\mu s,$  Duty Cycle  $\leq$  1.0%

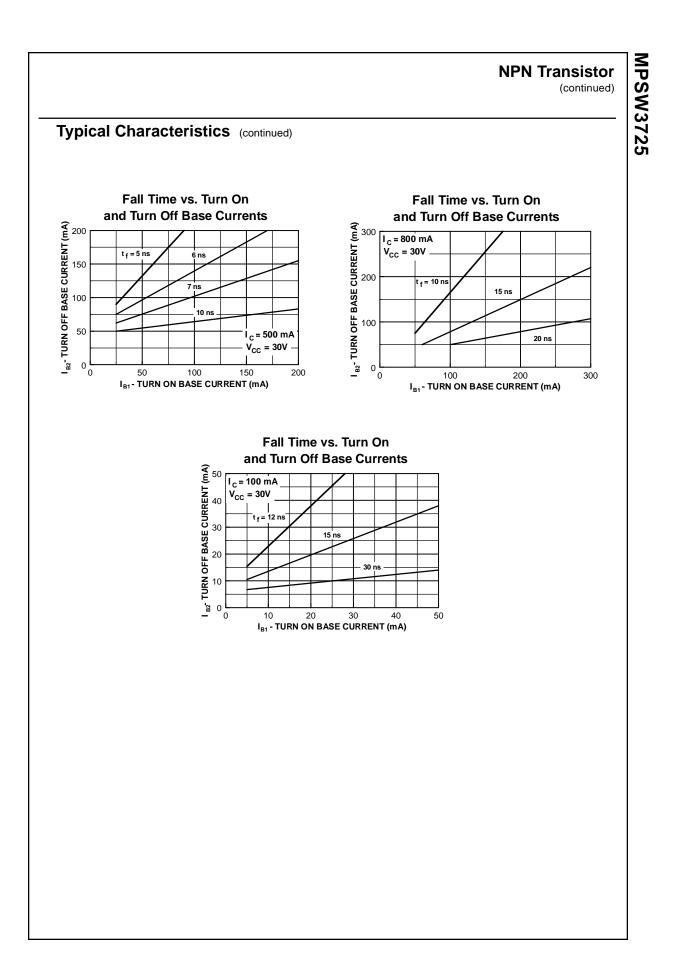
NPN Transistor (continued)

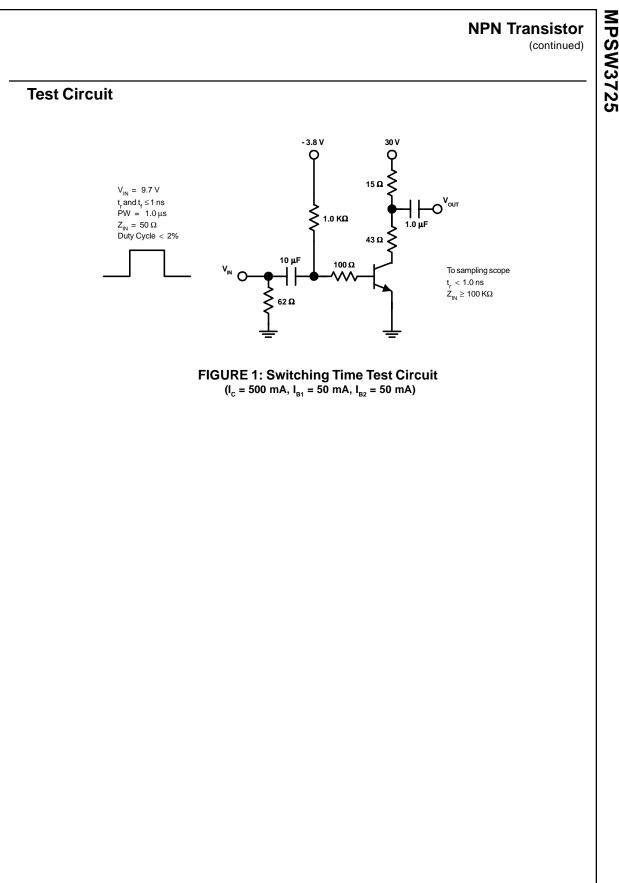




NPN Transistor (continued)







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## PRODUCT STATUS DEFINITIONS

**Definition of Terms** 

Datasheet Identification	Product Status	Definition
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	1	Rev G