

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 _{CEO}	Collector-Emitter Voltage	40	V
V _{CBO}	Collector-Base Voltage	60	V
V _{EBO}	Emitter-Base Voltage	6.0	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	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

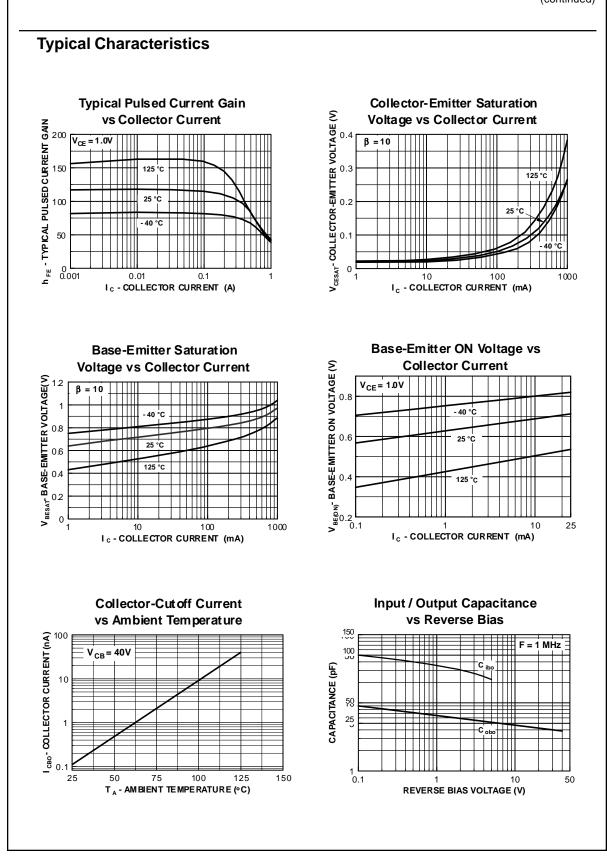
OFF CHARACTERISTICS $V_{(BR)CE0}$ Collector-Emitter Breakdown Ic = 10 mA, I _B = 0 40 V $V_{(BR)CES}$ Collector-Emitter Breakdown Ic = 10 µA, V _{BE} = 0 60 V $V_{(BR)CE0}$ Collector-Emitter Breakdown Voltage Ic = 10 µA, I _{CE} = 0 60 V $V_{(BR)CE0}$ Collector-Base Breakdown Voltage Ic = 10 µA, I _{CE} = 0 60 V $V_{(BR)CE0}$ Collector Cutoff Current VcB = 50 V, I _E = 0 60 10 $V_{(BR)CE0}$ Collector Cutoff Current VcB = 50 V, I _E = 0, T _A = 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								
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	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 _{(BR)CES}			
	V			60	$I_{\rm C} = 100 \ \mu \text{A}, \ I_{\rm CE} = 0$	Collector-Base Breakdown Voltage	V _{(BR)CBO}			
V _{CB} = 50 V, I _E = 0, T _A = 100°C 10 ON CHARACTERISTICS* I _C = 10 mA, V _{CE} = 1.0 V 30 18 h _{FE} DC Current Gain I _C = 10 mA, V _{CE} = 1.0 V 60 18 I _C = 100 mA, V _{CE} = 1.0 V, T _A = -55°C 30 16 100 mA, V _{CE} = 1.0 V 40 I _C = 500 mA, V _{CE} = 1.0 V, T _A = -55°C 20 12 500 mA, V _{CE} = 1.0 V 40 I _C = 500 mA, V _{CE} = 1.0 V, T _A = -55°C 20 12 500 mA, V _{CE} = 1.0 V 20 12 V _{CE} (sat) Collector-Emitter Saturation Voltage I _C = 10 mA, I _B = 1.0 mA 0.2 25 V _{CE} (sat) Collector-Emitter Saturation Voltage I _C = 10 mA, I _B = 10 mA 0.2 I _C = 300 mA, I _B = 30 mA 0.3 0.4 0.5 I _C = 10 A, I _B = 100 mA 0.3 0.4 0.5 I _C = 10 A, I _B = 10 mA 0.3 0.4 0.5 0.5 V _{BE} (sat) Base-Emitter Saturation Voltage I _C = 10 mA, I _B = 10 mA 0.3 0.4 I _C = 100 mA, I _B = 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 _{(BR)EBO}			
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$\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 _{BE(sat)}			
$I_{C} = 500 \text{ mA}, I_{B} = 50 \text{ mA}$ $I_{C} = 800 \text{ mA}, I_{B} = 80 \text{ mA}$ $I_{C} = 1.0 \text{ A}, I_{B} = 100 \text{ mA}$ 1.1 SMALL SIGNAL CHARACTERISTICS	6 V	0.86			$I_{\rm C} = 100 \text{ mA}, I_{\rm B} = 10 \text{ mA}$		()			
I _C = 800 mA, I _B = 80 mA 1.5 I _C = 1.0 A, I _B = 100 mA 1.5 SMALL SIGNAL CHARACTERISTICS 1.5		1.1								
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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 _{obo}			
C _{ibo} Input Capacitance $V_{EB} = 0.5 V, I_C = 0,$ 100 f = 1.0 MHz	D pF	100				Input Capacitance	Cibo			

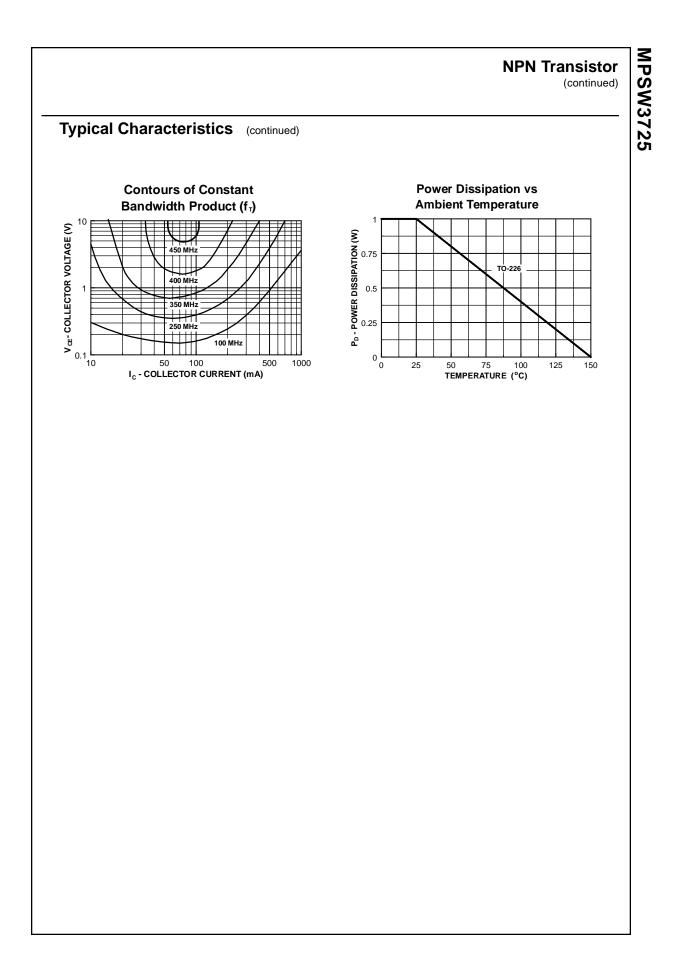
SWITCHING CHARACTERISTICS

t _{on}	Turn-on Time	$V_{CC} = 30 \text{ V}, \text{ V}_{BE} = 3.8 \text{ V},$	22	ns
t _d	Delay Time	I _C = 500 mA, I _{B1} = 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 _f	Fall Time		15	ns

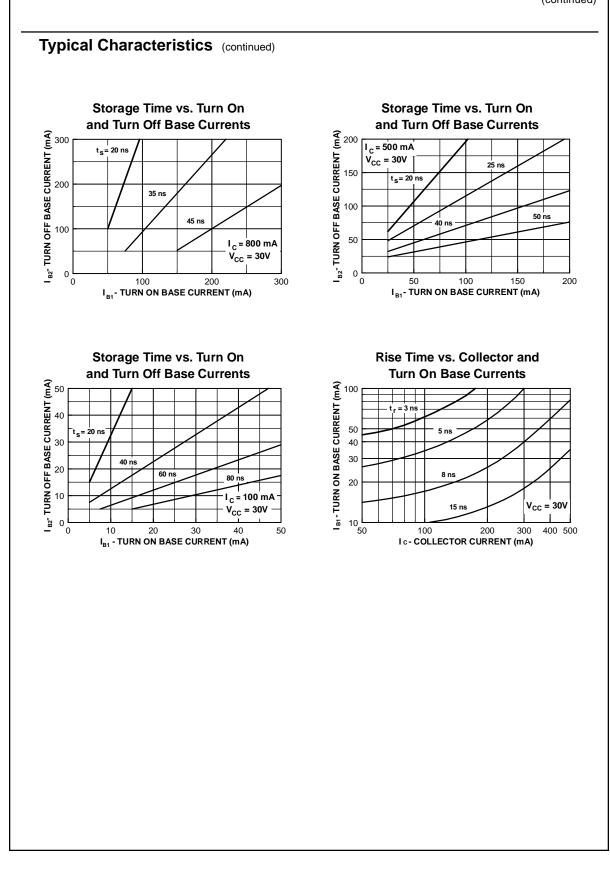
*Pulse Test: Pulse Width \leq 300 $\mu s,$ Duty Cycle \leq 1.0%

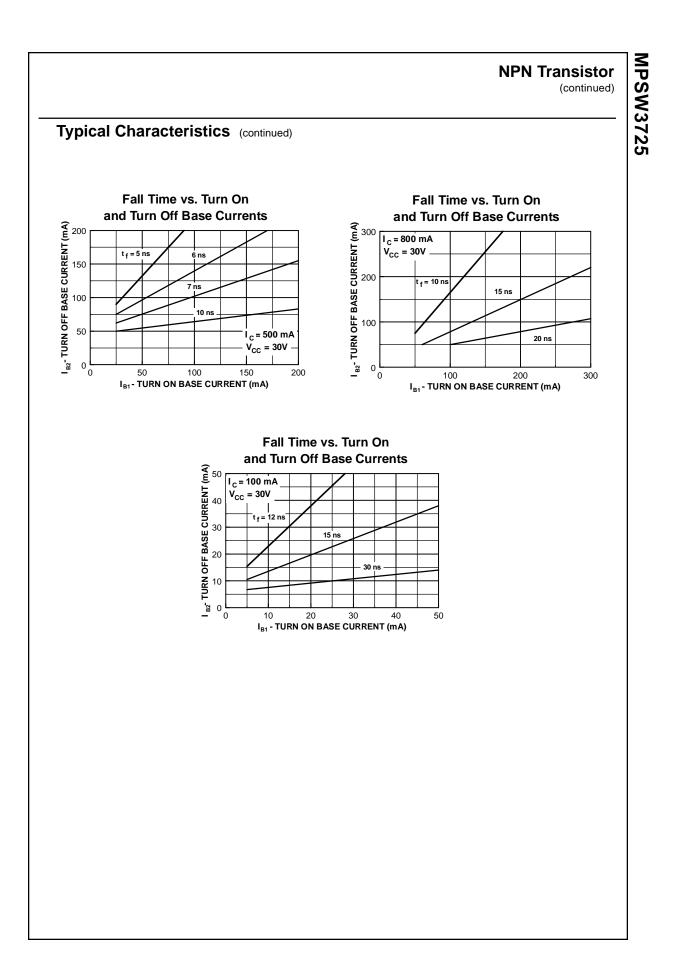
NPN Transistor (continued)

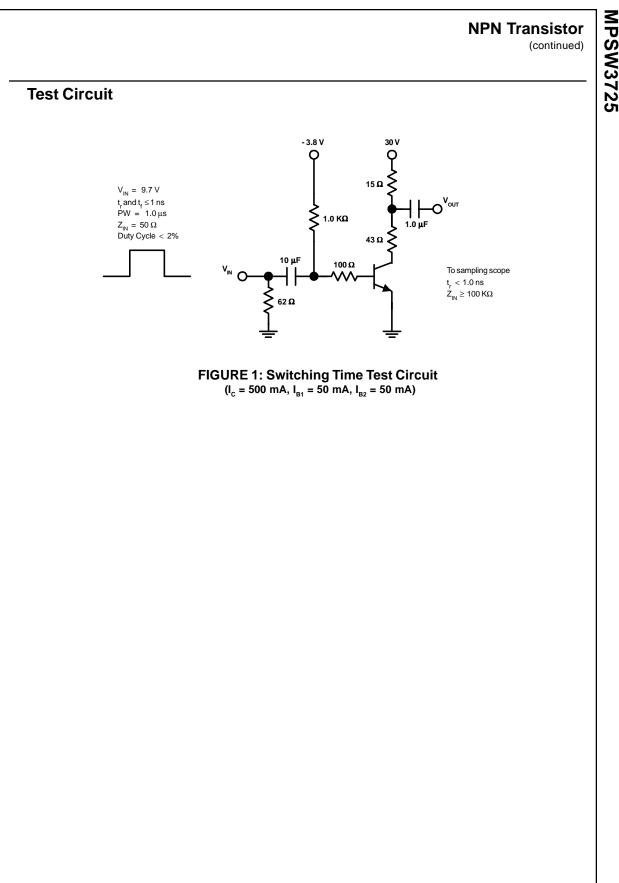




NPN Transistor (continued)







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PowerTrench[®] QFET™ QS™ QT Optoelectronics[™] Quiet Series[™] SILENT SWITCHER® SMART START™ SuperSOT[™]-3 SuperSOT[™]-6 SuperSOT[™]-8

SyncFET™ TinyLogic™ UHC™ VCX™

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PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
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