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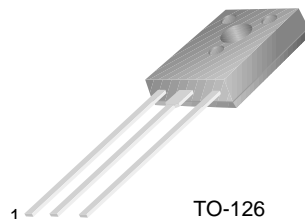
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**High Speed  
High Voltage Switching Industrial Use**



TO-126  
1. Emitter 2. Collector 3. Base

**NPN Epitaxial Silicon Transistor**

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

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage	500	V
$V_{CEO}$	Collector-Emitter Voltage	400	V
$V_{EBO}$	Emitter-Base Voltage	7	V
$I_C$	Collector Current (DC)	0.5	A
$I_{CP}$	*Collector Current (Pulse)	1	A
$I_B$	Base Current (DC)	0.25	A
$P_C$	Collector Dissipation ( $T_a=25^\circ\text{C}$ )	1	W
$P_C$	Collector Dissipation ( $T_C=25^\circ\text{C}$ )	10	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	- 55 ~ 150	$^\circ\text{C}$

\*  $PW \leq 300\mu\text{s}$ , Duty Cycle  $\leq 10\%$

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

Symbol	Parameter	Test Condition	Min.	Max.	Units
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage	$I_C = 0.3\text{A}$ , $I_{B1} = 0.06\text{A}$ , $L = 10\text{mH}$	400		V
$V_{CEX(sus)1}$	Collector-Emitter Sustaining Voltage	$I_C = 0.3\text{A}$ , $I_{B1} = -I_{B2} = 0.06\text{A}$ $V_{BE(off)} = -5\text{V}$ , $L = 10\text{mH}$ , Clamped	450		V
$V_{CEX(sus)2}$	Collector-Emitter Sustaining Voltage	$I_C = 0.6\text{A}$ , $I_{B1} = 0.2\text{A}$ , $I_{B2} = -0.06\text{A}$ $V_{BE(off)} = -5\text{V}$ , $L = 10\text{mH}$ , Clamped	400		V
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = 400\text{V}$ , $I_E = 0$		10	$\mu\text{A}$
$I_{CER}$	Collector Cut-off Current	$V_{CE} = 400\text{V}$ , $R_{BE} = 51\Omega$ , $T_C = 125^\circ\text{C}$		1	mA
$I_{CEX1}$	Collector Cut-off Current	$V_{CE} = 400\text{V}$ , $R_{BE(off)} = -1.5\text{V}$		10	$\mu\text{A}$
$I_{CEX2}$	Collector Cut-off Current	$V_{CE} = 400\text{V}$ , $R_{BE(off)} = -1.5\text{V}$ @ $T_C = 125^\circ\text{C}$		1	mA
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = 5\text{V}$ , $I_C = 0$		10	$\mu\text{A}$
$h_{FE1}$ $h_{FE2}$	* DC Current Gain	$V_{CE} = 5\text{V}$ , $I_C = 0.05\text{A}$ $V_{CE} = 5\text{V}$ , $I_C = 0.3\text{A}$	20 10	80	
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage	$I_C = 0.3\text{A}$ , $I_B = 0.06\text{A}$		1	V
$V_{BE(sat)}$	* Base-Emitter Saturation Voltage	$I_C = 0.3\text{A}$ , $I_B = 0.06\text{A}$		2	V
$t_{ON}$	Turn ON Time	$V_{CC} = 150\text{V}$ , $I_C = 0.3\text{A}$		1	$\mu\text{s}$
$t_{STG}$	Storage Time	$I_{B1} = -I_{B2} = 0.06\text{A}$ , $R_L = 500\Omega$		2.5	$\mu\text{s}$
$t_F$	Fall Time	$PW = 50\mu\text{s}$ , Duty Cycle $\leq 2\%$		1	$\mu\text{s}$

\* Pulse Test:  $PW \leq 350\mu\text{s}$ , Duty Cycle  $\leq 2\%$  Pulsed

**$h_{FE}$  Classification**

Classification	R	O	Y
$h_{FE1}$	20 ~ 40	30 ~ 60	40 ~ 80

# Typical Characteristics

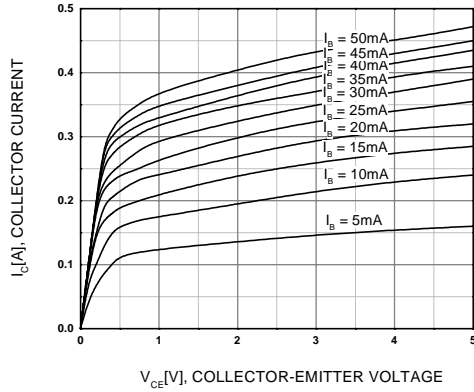


Figure 1. Static Characteristic

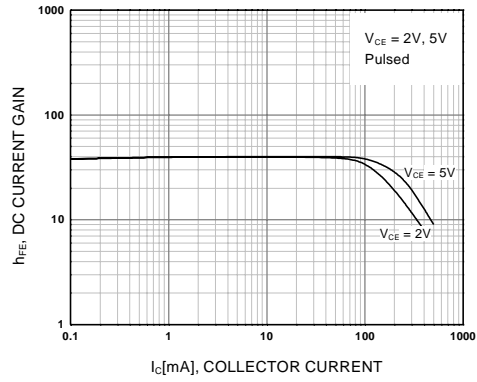


Figure 2. DC current Gain

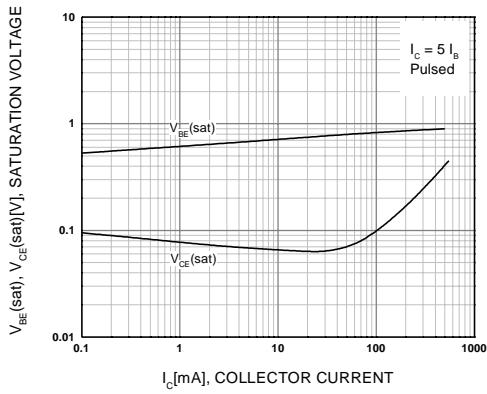


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

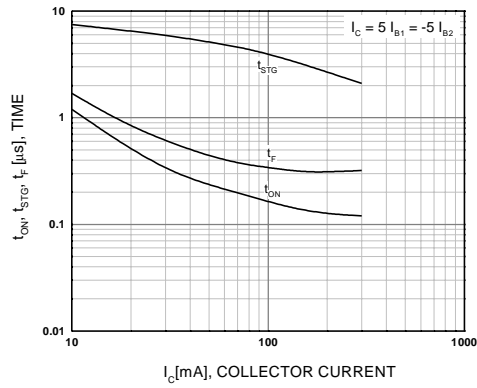


Figure 4. Switching Time

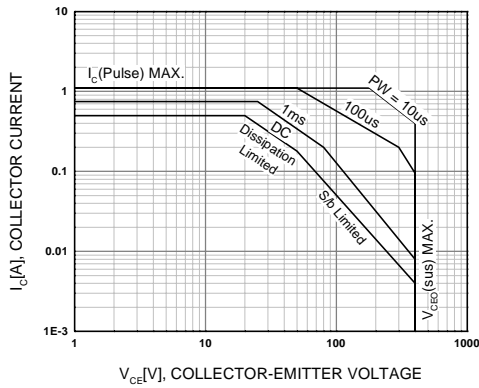


Figure 5. Safe Operating Area

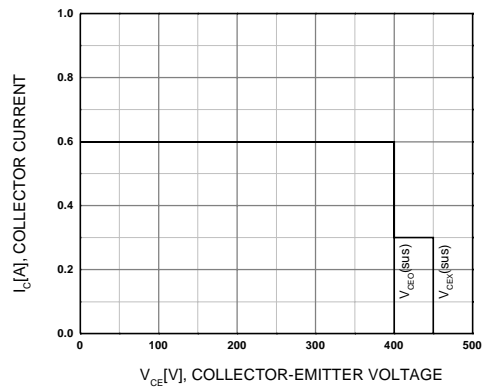


Figure 6. Reverse Bias Safe Operating Area

### Typical Characteristics (Continued)

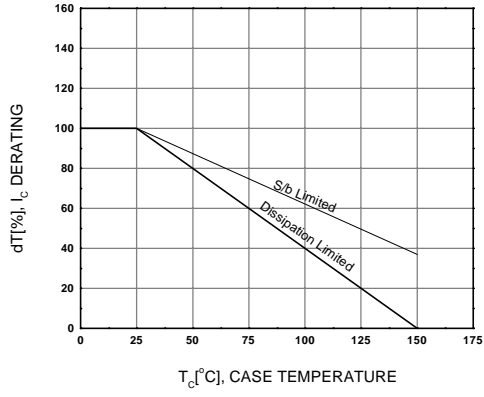


Figure 7. Derating Curve of Safe Operating Area

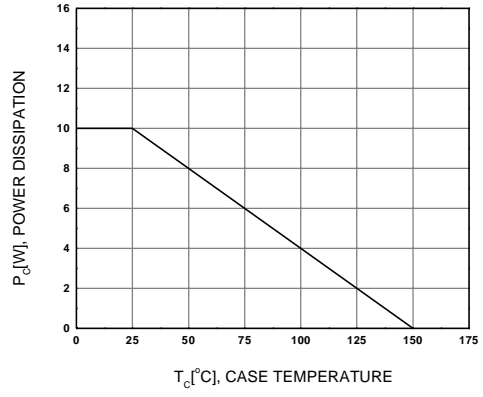


Figure 8. Power Derating



TOP VIEW



SIDE VIEW



FRONT VIEW

PRODUCTION CODE	TERMINAL LENGTH "D"	TERMINAL LENGTH "E"
TSSTU	3.45 - 4.05	6.45-7.45
TSTU	2.36 - 2.96	5.36-6.36
NONE (STD LENGTH)	12.76 - 13.36	15.76-16.76

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- B. ALL DIMENSIONS ARE IN MILLIMETERS
- C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR PROTRUSIONS

 FOR TERMINAL LENGTH "D", REFER TO TABLE

 FOR TERMINAL LENGTH "E", REFER TO TABLE

F. DRAWING FILENAME: MKT-TO126AArev2



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