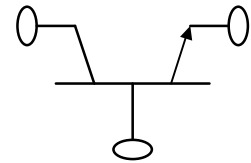


## DIE SPECIFICATION

### SWITCHING TRANSISTOR NPN SILICON



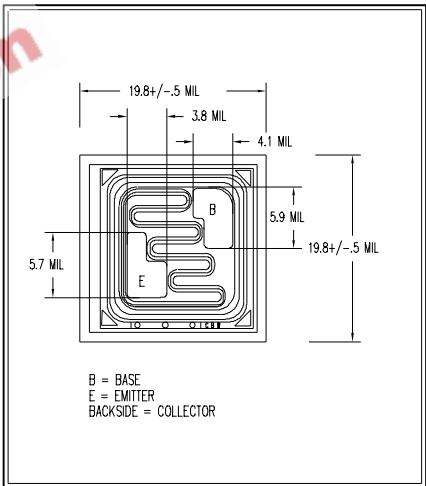
#### FEATURES:

- ELECTRICAL PERFORMANCE I.A.W. MIL-PRF-19500/255
- AVAILABLE IN WAFER OR CHIP FORM FOR HYBRID APPLICATIONS
- GENERAL PURPOSE-HIGH SPEED SWITCHING APPLICATIONS
- LOW  $V_{CE(sat)}$ : .3V @  $I_C = 150 \text{ mAdc}$

**PHYSICAL DIMENSIONS**

**Absolute Maximum Ratings:**

Symbol	Parameter	Limit	Unit
V <sub>ceo</sub>	Collector-Emitter Voltage	50	Vdc
V <sub>cbo</sub>	Collector-Base Voltage	75	Vdc
V <sub>ebo</sub>	Emitter-Base Voltage	6.0	Vdc
I <sub>c</sub>	Collector Current- Continuous	800	mAdc
T <sub>j</sub> , T <sub>stg</sub>	Operating Junction & Storage Temperature Range	-65 to +200	°C



**Packaging Options:**  
W: Wafer (100% probed)    U: Wafer (sample probed)  
D: Chip (Waffle Pack)    B: Chip (Vial)  
V: Chip (Waffle Pack, 100% visually inspected)    X: Other

**Processing Options:**  
Standard: Capable of JANTXV applications (No Suffix)  
Suffix C: Commercial  
Suffix S: Capable of S-Level equivalent applications

**Metallization Options:**  
Standard: Al Top    /    Au Backside (No Dash #)  
Dash 1: Al Top    /    TiPdAg Backside

**ORDERING INFORMATION:**  
PART #: 2N2222A\_ \_ - \_  
First Suffix Letter: Packaging Option  
Second Suffix Letter: Processing Option  
Dash #: Metallization Option

Serotech reserves the right to make changes to any product design, specification, or other information at any time without prior notice.  
Data Sheet, Die, 2N2222A MSW Rev. - 4/15/98

## Electrical Characteristics @ T<sub>j</sub> = 25 °C

Symbol	Parameter	Conditions	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>					
V(BR)CBO	Breakdown Voltage, Collector to Base	Bias Cond. D, I <sub>C</sub> =10uAdc	75		Vdc
V(BR)EBO	Breakdown Voltage, Emitter to Base	Bias Cond. D, I <sub>E</sub> =10uAdc	6		Vdc
V(BR)CEO	Breakdown Voltage, Collector to Emitter	Bias Cond. D, I <sub>C</sub> = 10mAdc, pulsed	50		Vdc
ICES	Collector to Emitter Cutoff Current	Bias Cond. D, V <sub>CE</sub> =50Vdc		50	nAdc
ICBO1	Collector to Base Cutoff Current	Bias Cond. D, V <sub>CB</sub> =60Vdc		10	nAdc
IEBO	Emitter to Base Cutoff Current	Bias Cond. D, V <sub>EB</sub> = 4Vdc		10	nAdc
<b>ON CHARACTERISTICS</b>					
hFE1	Forward-Current Transfer Ratio	V <sub>CE</sub> =10Vdc, I <sub>C</sub> =0.1mAdc	50		
hFE2	Forward-Current Transfer Ratio	V <sub>CE</sub> =10Vdc, I <sub>C</sub> =1.0mAdc	75	325	
hFE3	Forward-Current Transfer Ratio	V <sub>CE</sub> =10Vdc, I <sub>C</sub> =10mAdc	100		
hFE4	Forward-Current Transfer Ratio	V <sub>CE</sub> =10Vdc, I <sub>C</sub> =150mAdc, pulsed	100	300	
hFE5	Forward-Current Transfer Ratio	V <sub>CE</sub> =10Vdc, I <sub>C</sub> =500mAdc, pulsed	30		
V <sub>CE</sub> (sat)1	Collector to Emitter Saturation Voltage	I <sub>C</sub> =150mAdc, I <sub>B</sub> =15mAdc, pulsed		0.3	Vdc
V <sub>CE</sub> (sat)2	Collector to Emitter Saturation Voltage	I <sub>C</sub> =500mAdc, I <sub>B</sub> =50mAdc, pulsed		1	Vdc
V <sub>BE</sub> (sat)1	Base to Emitter Saturation Voltage	I <sub>C</sub> =150mAdc, I <sub>B</sub> =15mAdc, pulsed	0.6	1.2	Vdc
V <sub>BE</sub> (sat)2	Base to Emitter Saturation Voltage	I <sub>C</sub> =500mAdc, I <sub>B</sub> =50mAdc, pulsed		2	Vdc
<b>SMALL SIGNAL CHARACTERISTICS</b>					
h <sub>fe</sub>	Short Circuit Forward Current Xfer Ratio	V <sub>CE</sub> = 10Vdc, I <sub>C</sub> =1mAdc, f= 1kHz	50		
/h <sub>fe</sub> /	Magnitude of Short Circuit Forward Current Transfer Ratio	V <sub>CE</sub> = 20Vdc, I <sub>C</sub> =50mAdc, f=100MHz	2.5		
C <sub>obo</sub>	Output Capacitance	V <sub>CB</sub> = 10Vdc, I <sub>E</sub> =0, 100kHz< f <1MHz		8	pF
C <sub>ibo</sub>	Input Capacitance	V <sub>EB</sub> = 2.0Vdc, I <sub>C</sub> =0, 100kHz< f <1MHz		25	pF
<b>SWITCHING CHARACTERISTICS</b>					
t <sub>on</sub>	Saturated Turn-on Time	As defined in 19500/255 Figure 8		45	nS
t <sub>off</sub>	Saturated Turn-off Time	As defined in 19500/255 Figure 9		300	nS