

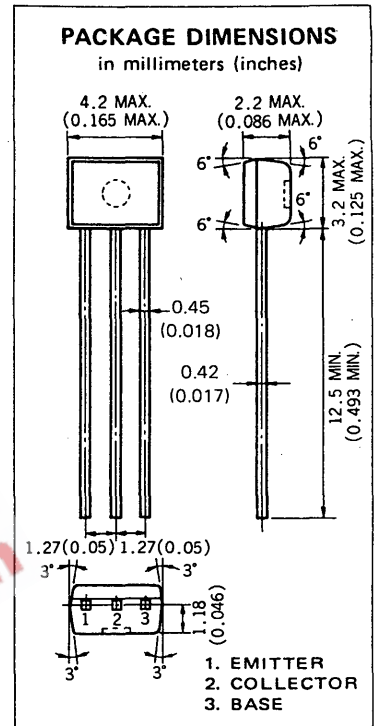
**DESCRIPTION** The 2SA1459 is designed for general purpose amplifier and high speed switching applications.

- FEATURES**
- High Frequency Current Gain.
  - High Speed Switching.
  - Small Output Capacitance.
  - Low Collector Saturation Voltage.

**ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )**

Maximum Temperatures	
Storage Temperature	-55 to +150 °C
Junction Temperature	150 °C Maximum
Maximum Power Dissipation ( $T_a = 25^\circ\text{C}$ )	
Total Power Dissipation	250 mW
Maximum Voltages and Currents ( $T_a = 25^\circ\text{C}$ )	
$V_{CBO}$ Collector to Base Voltage	-15 V
$V_{CEO}$ Collector to Emitter Voltage	-15 V
$V_{EBO}$ Emitter to Base Voltage	-4.5 V
$I_C$ Collector Current (DC)	-50 mA
$I_C$ Collector Current (Pulse)*	-100 mA

\*  $PW \leq 2$  ms, Duty Cycle  $\leq 50$  %



**ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )**

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
$t_{on}$	Turn-on Time		9.0	20	ns	See Test Circuit.
$t_{off}$	Turn-off Time		19	40	ns	See Test Circuit.
$t_{stg}$	Storage Time		16	40	ns	See Test Circuit.
$f_T$	Gain Bandwidth Product	800	1800		MHz	$V_{CE} = -10$ V, $I_E = 10$ mA, $f = 100$ MHz
$C_{ob}$	Output Capacitance		2.0	3.0	pF	$V_{CB} = -5.0$ V, $I_E = 0$ , $f = 1$ MHz
$h_{FE1}^{**}$	DC Current Gain	50	80	150	-	$V_{CE} = -1.0$ V, $I_C = -10$ mA
$h_{FE2}^{**}$	DC Current Gain	30	70		-	$V_{CE} = -1.0$ V, $I_C = -1.0$ mA
$V_{CE(sat)}^{**}$	Collector Saturation Voltage		-0.09	-0.20	V	$I_C = -10$ mA, $I_B = -1.0$ mA
$V_{BE(sat)}^{**}$	Base Saturation Voltage		-0.80	-0.95	V	$I_C = -10$ mA, $I_B = -1.0$ mA
$I_{CBO}$	Collector Cutoff Current			-0.1	$\mu$ A	$V_{CB} = -8.0$ V, $I_E = 0$
$I_{EBO}$	Emitter Cutoff Current			-0.1	$\mu$ A	$V_{EB} = -3.0$ V, $I_C = 0$

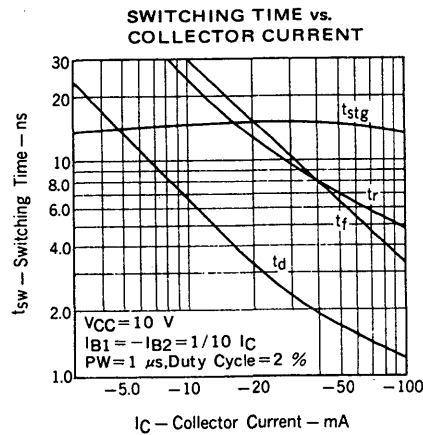
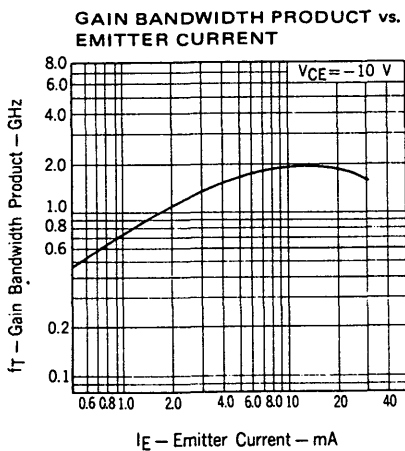
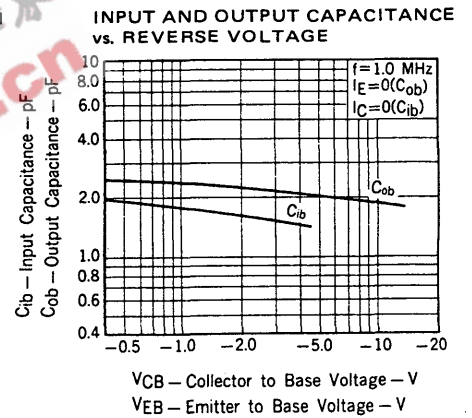
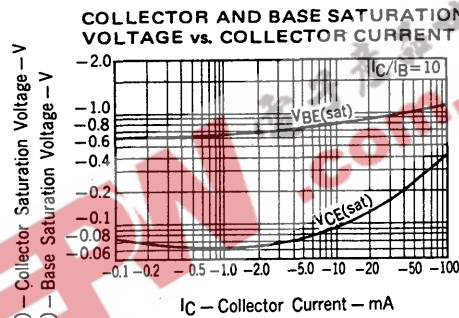
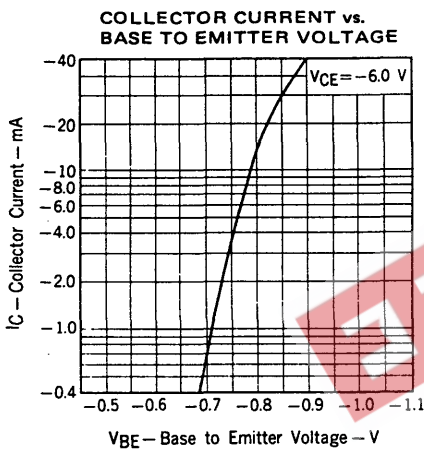
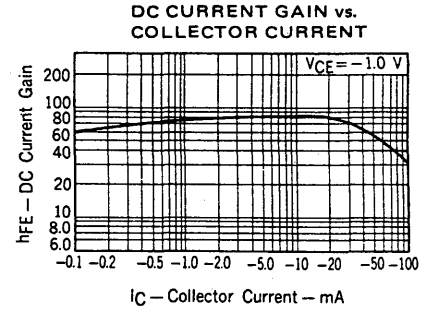
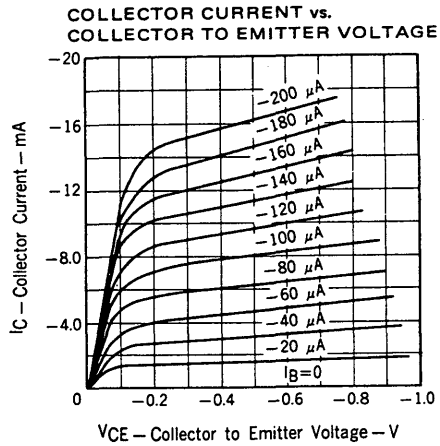
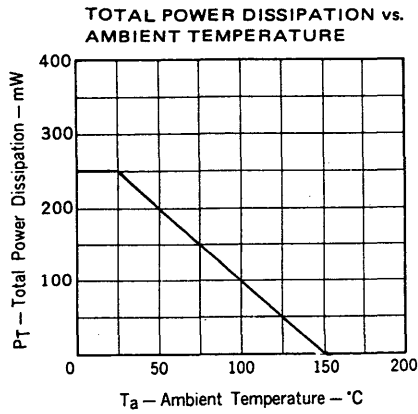
\*\* Pulsed  $PW \leq 350$   $\mu$ s, Duty Cycle  $\leq 2$  %

**Classification of  $h_{FE1}$**

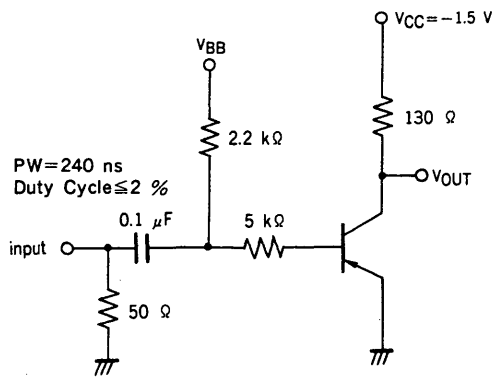
Rank	L	K
Range	50 to 100	75 to 150

$h_{FE2}$  Test Conditions:  $V_{CE} = -1.0$  V,  $I_C = -10$  mA

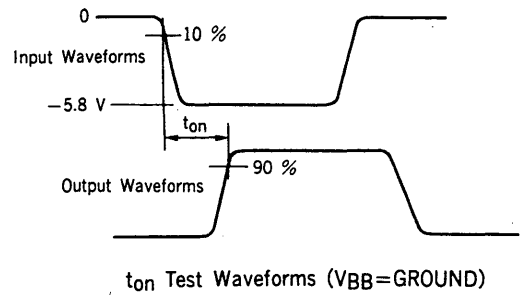
TYPICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )



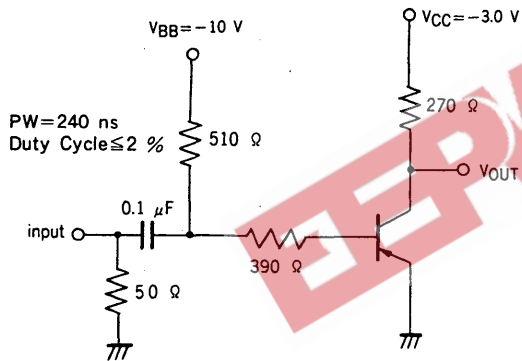
SWITCHING TIME TEST CIRCUIT



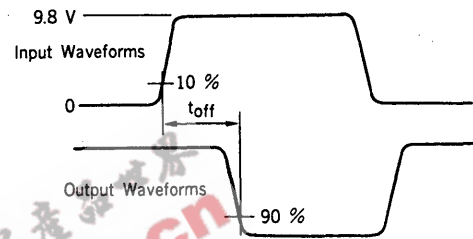
ton, toff Test Circuit



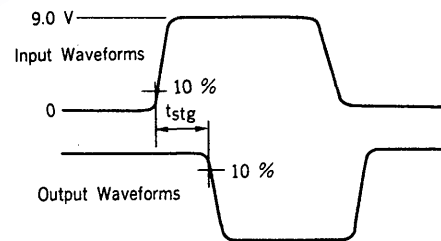
ton Test Waveforms (VBB=GROUND)



tstg Test Circuit



toff Test Waveforms (VBB=-8.0 V)



tstg Test Waveforms