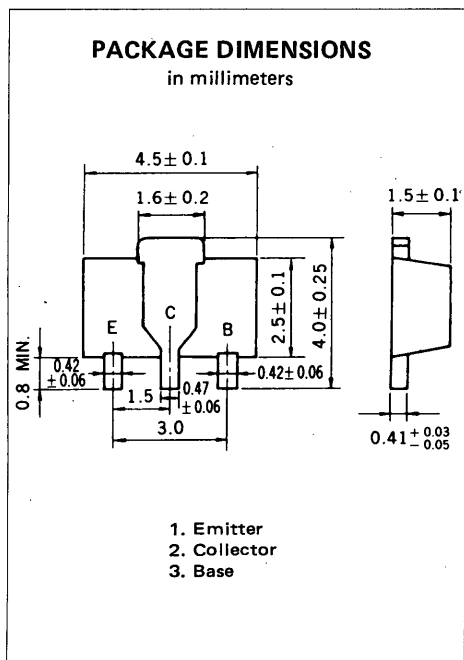


HIGH SPEED SWITCHING  
NPN SILICON EPITAXIAL TRANSISTOR  
POWER MINI MOLD



**DESCRIPTION** The 2SC3736 is designed for power amplifier and high speed switching applications.

- FEATURES**
- High speed, high voltage switching.
  - Low Collector Saturation Voltage.
  - Complementary to the NEC 2SA1460 PNP transistor.

**ABSOLUTE MAXIMUM RATINGS**

Maximum Voltages and Currents ( $T_a = 25^\circ\text{C}$ )

Collector to Base Voltage	$V_{CB0}$	80	V
Collector to Emitter Voltage	$V_{CEO}$	45	V
Emitter to Base Voltage	$V_{EBO}$	5.0	V
Collector Current (DC)	$I_C$	1.0	A
Collector Current (Pulse)*	$I_C$	2.0	A

Maximum Power Dissipation

Total Power Dissipation at $25^\circ\text{C}$ Ambient Temperature**	$P_T$	2.0	W
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Maximum Temperatures

Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +150	$^\circ\text{C}$

\*  $PW \leq 10$  ms, Duty Cycle  $\leq 50\%$

\*\* When mounted on ceramic substrate of  $16\text{ cm}^2 \times 0.7$  mm

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

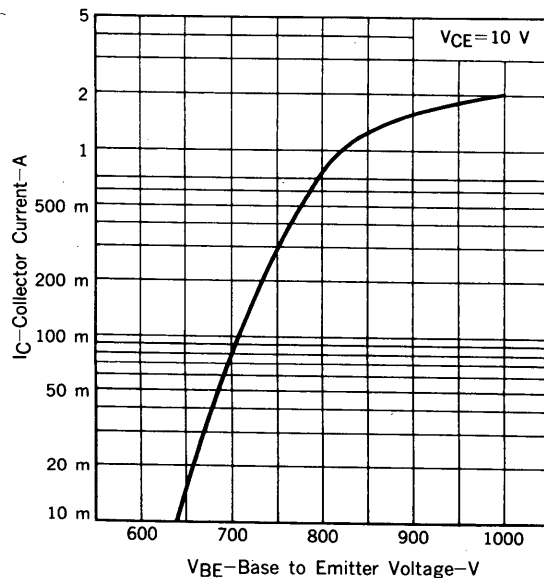
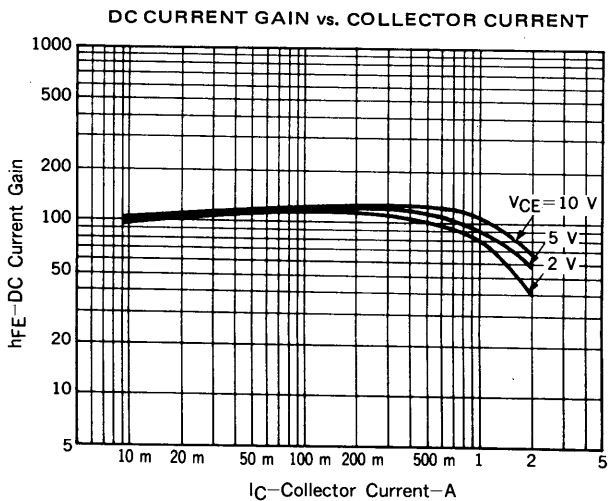
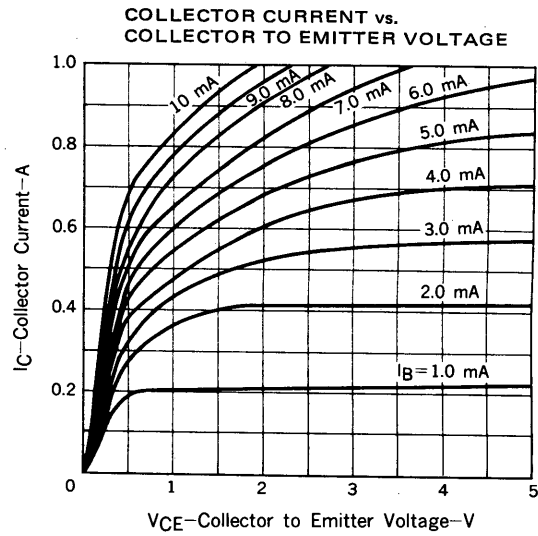
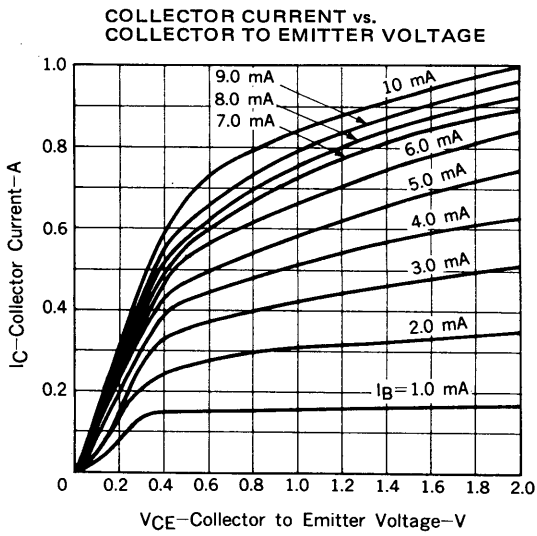
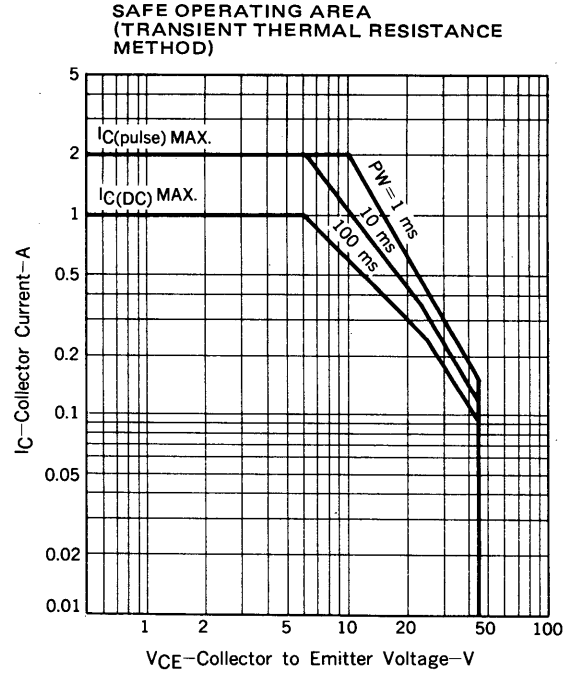
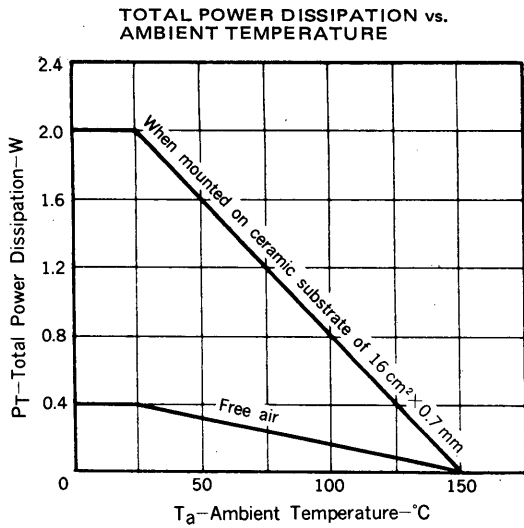
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	$I_{CES}$			0.5	$\mu\text{A}$	$V_{CE} = 45\text{ V}, R_{BE} = 0$
Emitter Cutoff Current	$I_{EBO}$			0.5	$\mu\text{A}$	$V_{EB} = 4.0\text{ V}, I_C = 0$
DC Current Gain	$h_{FE}$	60		200		$V_{CE} = 10\text{ V}, I_C = 50\text{ mA}$
Collector Saturation Voltage	$V_{CE(sat)}$		0.17	0.4	V	$I_C = 500\text{ mA}, I_B = 50\text{ mA}$
Base Saturation Voltage	$V_{BE(sat)}$		0.90	1.2	V	
Gain Bandwidth Product	$f_T$	300	380		MHz	$V_{CE} = 10\text{ V}, I_E = -100\text{ mA}$
Output Capacitance	$C_{ob}$		6.7	10	pF	$V_{CB} = 10\text{ V}, I_E = 0, f = 1.0\text{ MHz}$
Turn-on Time	$t_{on}$		20	40	ns	$I_C = 500\text{ mA}$ $I_{B1} = -I_{B2} = 50\text{ mA}$
Storage Time	$t_{stg}$		55	80	ns	
Turn-off Time	$t_{off}$		72	100	ns	

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

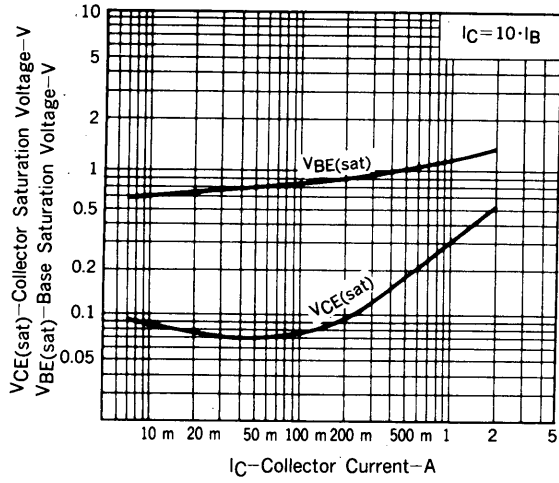
**$h_{FE}$  Classification**

MARKING	OL	OK
$h_{FE}$	60 to 120	100 to 200

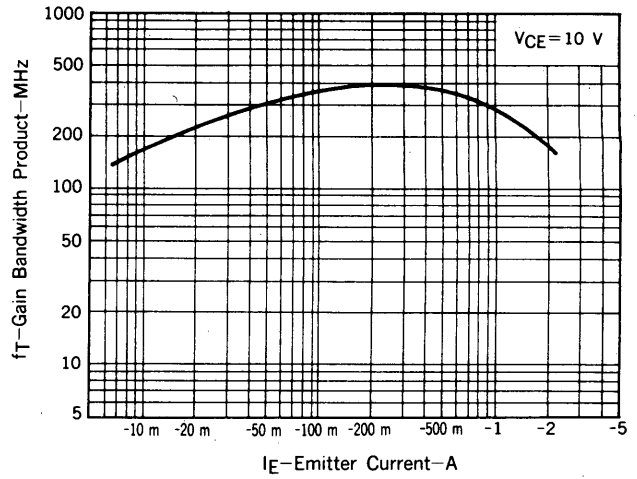
TYPICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )



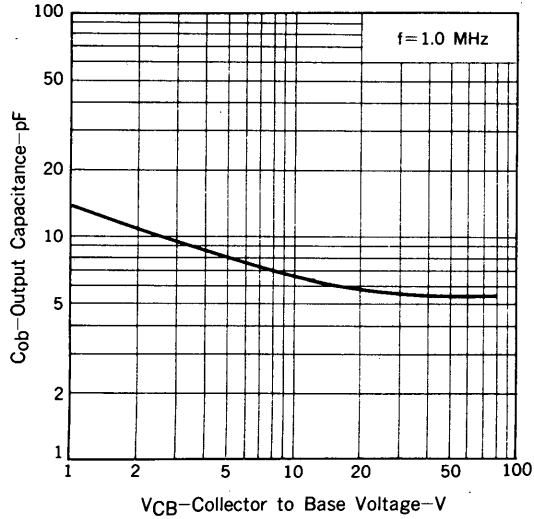
BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



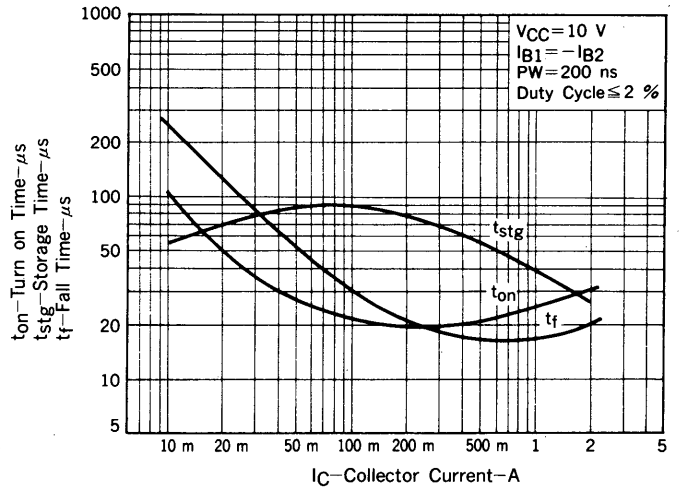
GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



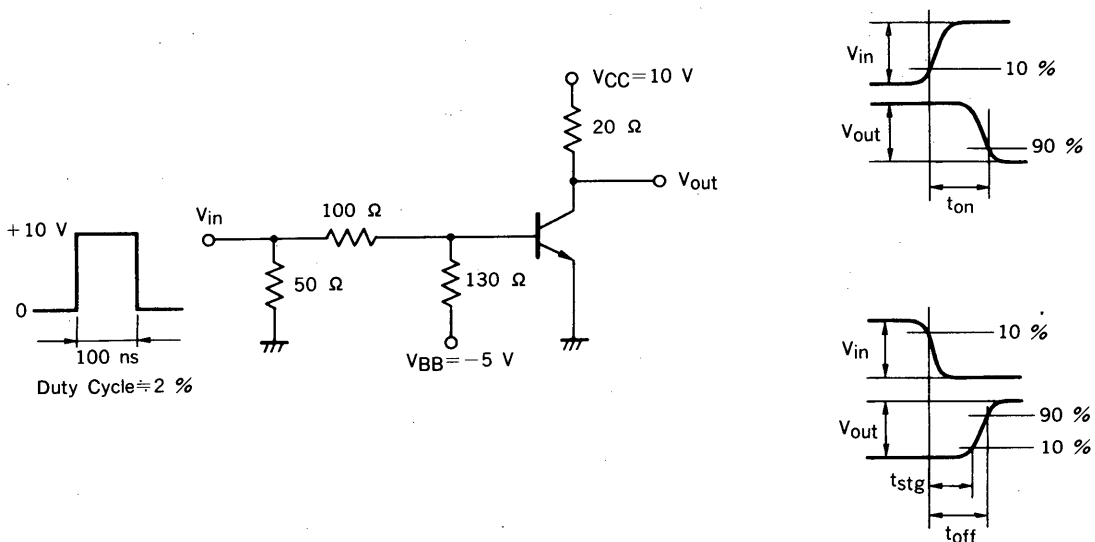
OUTPUT CAPACITANCE vs. REVERSE VOLTAGE



SWITCHING TIME vs. COLLECTOR CURRENT



SWITCHING TIME TEST CIRCUIT



REFERENCE

Document Name	Document No.
NEC semiconductor device reliability/quality control system.	TEI-1202
Quality grade on NEC semiconductor devices.	IEI-1209
Semiconductor device mounting technology manual.	IEI-1207
Semiconductor device package manual.	IEI-1213
Guide to quality assurance for semiconductor devices.	MEI-1202
Semiconductor selection guide.	MF-1134

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