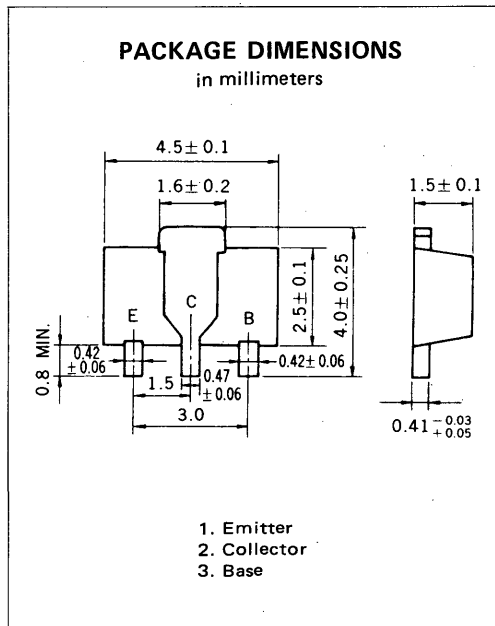


NPN SILICON EPITAXIAL TRANSISTOR

POWER MINI MOLD

DESCRIPTION

2SD1614 is designed for audio frequency power amplifier and switching application, especially in Hybrid Integrated Circuits.



FEATURES

- World Standard Miniature Package
- High DC Current Gain : h_{FE} 135 to 600
- Low $V_{CE(sat)}$: $V_{CE(sat)} = 0.2$ V
- Complement to 2SB1114

ABSOLUTE MAXIMUM RATINGS

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

Collector to Base Voltage	V_{CBO}	40	V
Collector to Emitter Voltage	V_{CEO}	20	V
Emitter to Base Voltage	V_{EBO}	6	V
Collector Current (DC)	I_C	2	A
Collector Current (Pulse) *	I_C	3	A

Maximum Power Dissipation

Total Power Dissipation at 25°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 ≤ 10 ms, Duty Cycle $\leq 50\%$

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

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

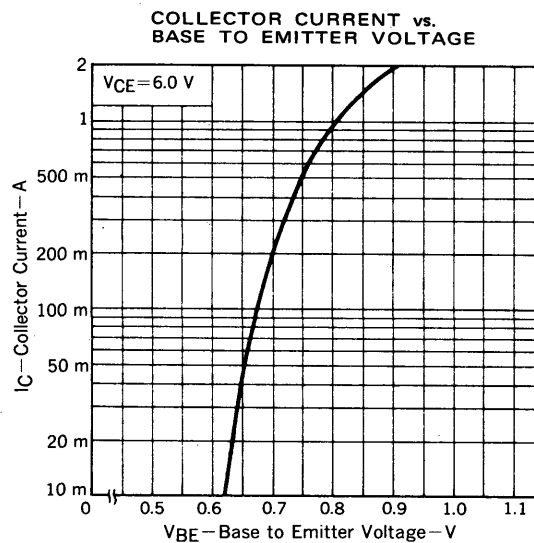
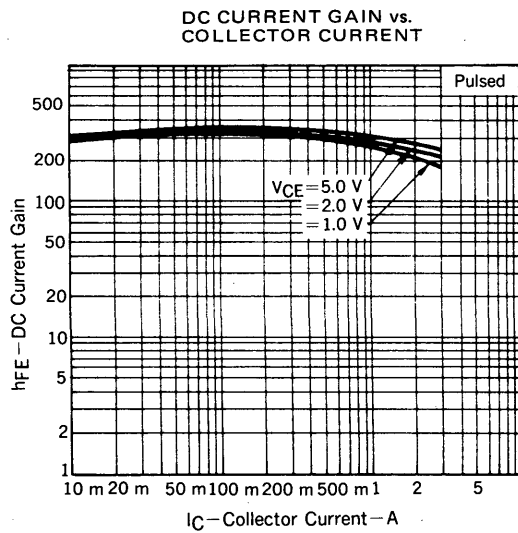
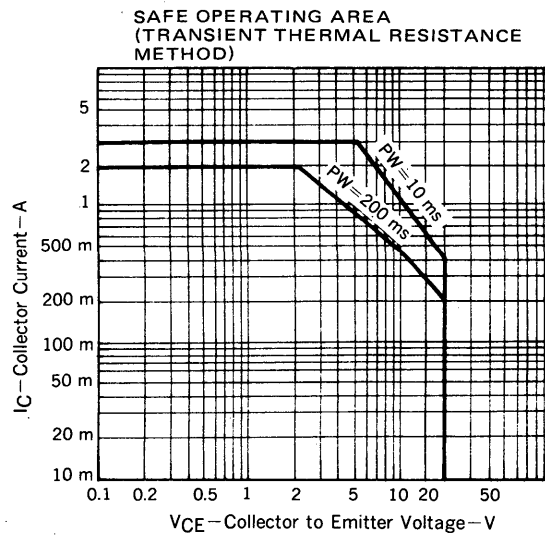
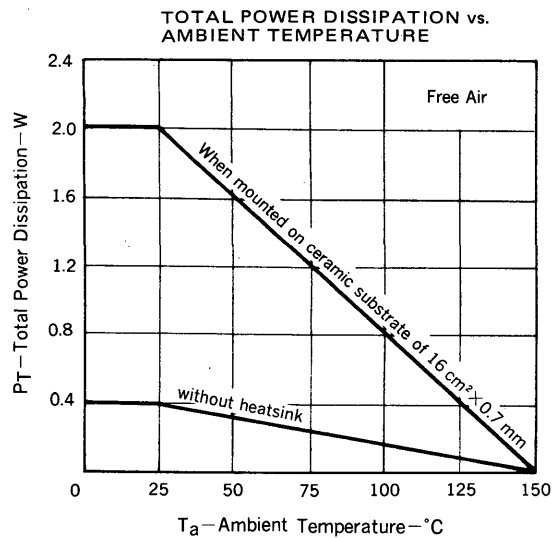
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			100	nA	$V_{CB} = 30\text{ V}, I_E = 0$
Emitter Cutoff Current	I_{EBO}			100	nA	$V_{EB} = 6.0\text{ V}, I_C = 0$
DC Current Gain	h_{FE1}^{***}	135	350	600		$V_{CE} = 2.0\text{ V}, I_C = 100\text{ mA}$
DC Current Gain	h_{FE2}^{***}	40				$V_{CE} = 2.0\text{ V}, I_C = 2.0\text{ A}$
Collector Saturation Voltage	$V_{CE(sat)}^{***}$		0.3	0.5	V	$I_C = 2.0\text{ A}, I_B = 50\text{ mA}$
Base Saturation Voltage	$V_{BE(sat)}^{***}$		0.95	1.2	V	$I_C = 2.0\text{ A}, I_B = 50\text{ mA}$
Base to Emitter Voltage	V_{BE}^{***}	650	680	750	mV	$V_{CE} = 6.0\text{ V}, I_C = 100\text{ mA}$
Gain Bandwidth Product	f_T		200		MHz	$V_{CE} = 10\text{ V}, I_E = -50\text{ mA}$
Output Capacitance	C_{ob}		28		pF	$V_{CB} = 10\text{ V}, I_E = 0, f = 1.0\text{ MHz}$

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

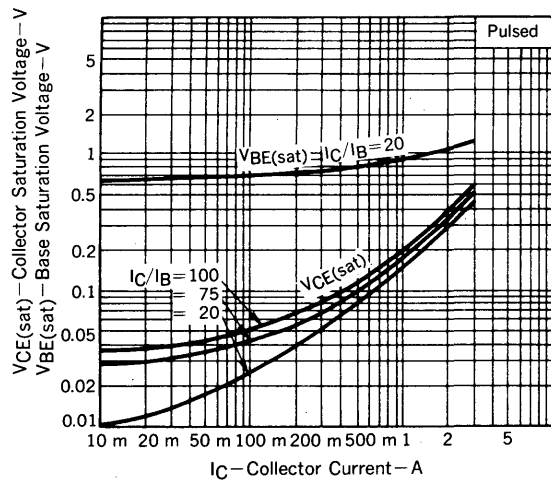
h_{FE} Classification

MARKING	XM	XL	XK
h_{FE}	135 to 270	200 to 400	300 to 600

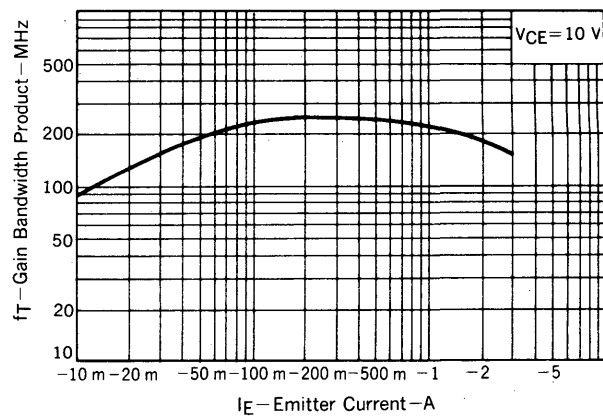
TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)



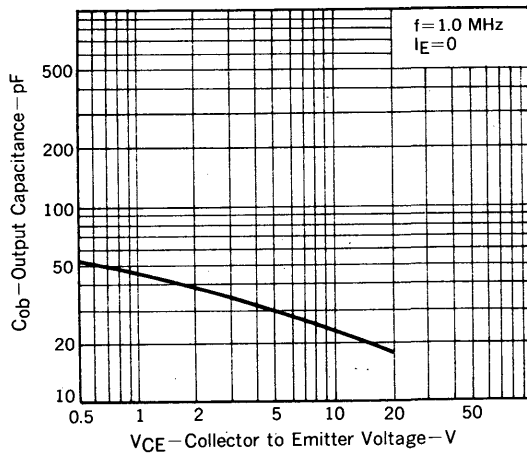
BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



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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