

SILICON TRANSISTORS

2SD1615, 2SD1615A

NPN SILICON EPITAXIAL TRANSISTORS

POWER MINI MOLD

DESCRIPTION

2SD1615, 1615A are designed for audio frequency power amplifier and switching application, especially in Hybrid Integrated Circuits.

FEATURES

- World Standard Miniature Package
- Low $V_{CE(sat)}$ $V_{CE(sat)} = 0.15$ V
- Complement to 2SB1115, 2SD1115A

ABSOLUTE MAXIMUM RATINGS

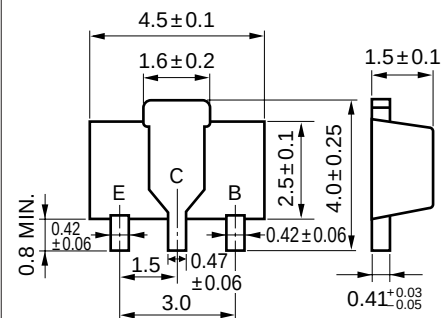
Maximum Voltages and Currents ($T_A = 25^\circ\text{C}$)		2SD1615	2SD1615A	
Collector to Base Voltage	V_{CBO}	60	120	V
Collector to Emitter Voltage	V_{CEO}	50	60	V
Emitter to Base Voltage	V_{EBO}		6	V
Collector Current (DC)	I_C		1	A
Collector Current (Pulse)*	I_C		2	A
Maximum Power Dissipation				
Total Power Dissipation				
at 25°C Ambient Temperature**	P_T	2.0		W
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 ≤ 50 %

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

PACKAGE DIMENSIONS

in millimeters



1. Emitter
2. Collector
3. Base

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

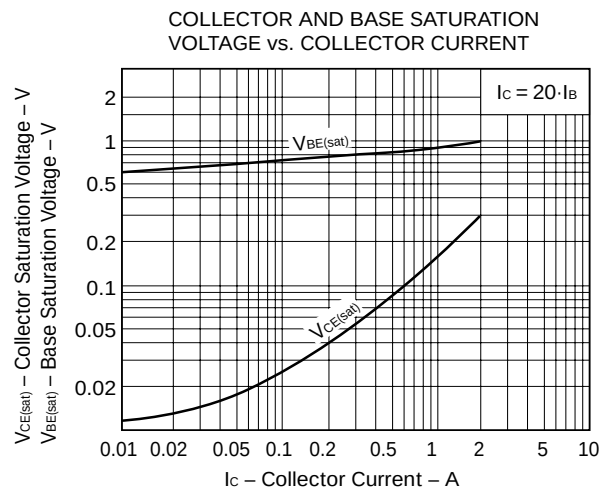
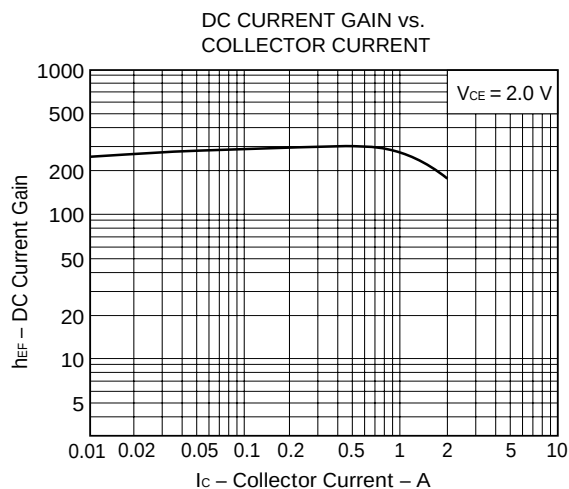
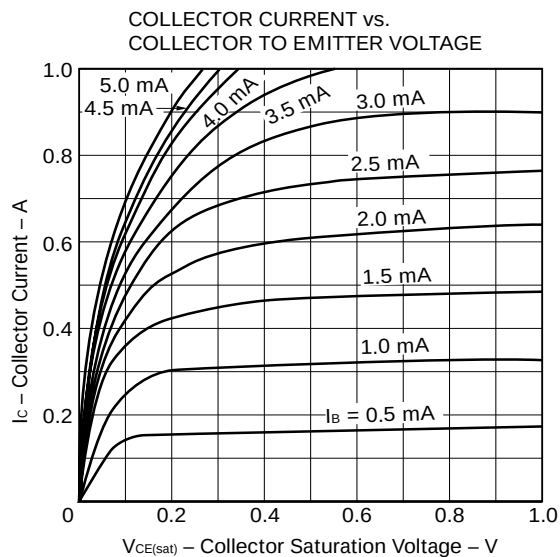
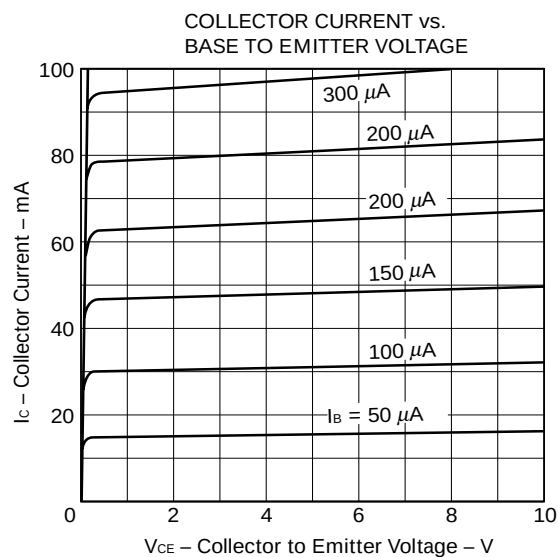
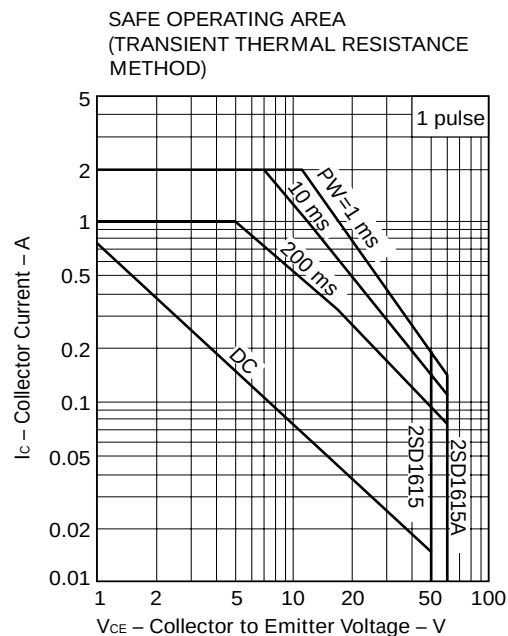
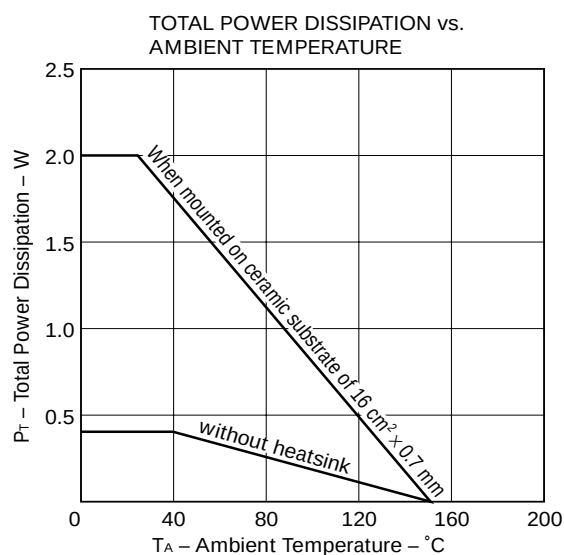
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS	
Collector Cutoff Current	I _{CBO}			100	nA	2SD1615	V _{CB} = 60 V, I _E = 0
				100	nA	2SD1615A	V _{CB} = 120 V, I _E = 0
Emitter Cutoff Current	I _{EBO}			100	nA	V _{EB} = 6.0 V, I _C = 0	
DC Current Gain	h _{FE1} ***	135	290	600		2SC1615	V _{CE} = 2.0 V, I _C = 100 mA
		135		400		2SD1615A	
DC Current Gain	h _{FE2} ***	81	270			V _{CE} = 2.0 V, I _C = 1.0 A	
Collector Saturation Voltage	V _{CE(sat)} ***		0.15	0.3	V	I _C = 1.0 A, I _B = 50 mA	
Base Saturation Voltage	V _{BE(sat)} ***		0.9	1.2	V	I _C = 1.0 A, I _B = 50 mA	
Base to Emitter Voltage	V _{BE} ***	600		700	mV	V _{CE} = 2.0 V, I _C = 50 mA	
Gain Bandwidth Product	f _T	80	160		MHz	V _{CE} = 2.0 V, I _E = -100 mA	
Output Capacitance	C _{ob}		19		pF	V _{CB} = 10 V, I _E = 0, f = 1.0 MHz	

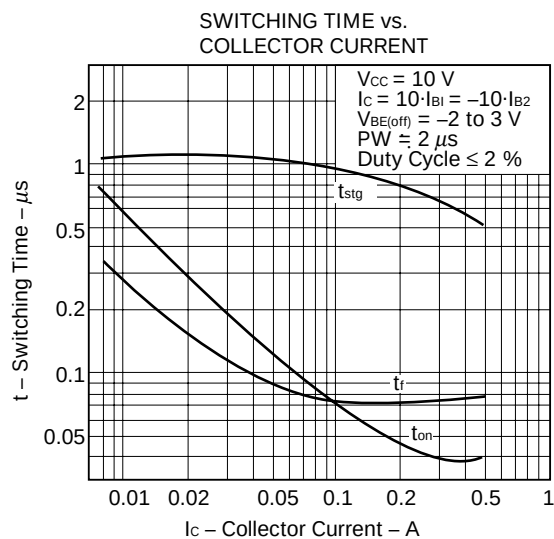
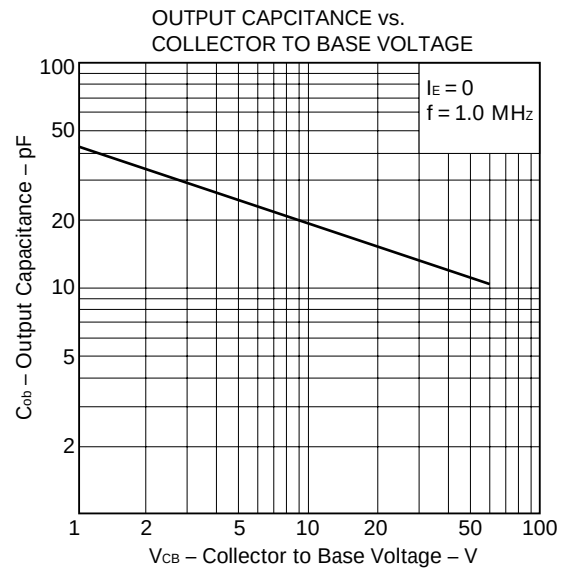
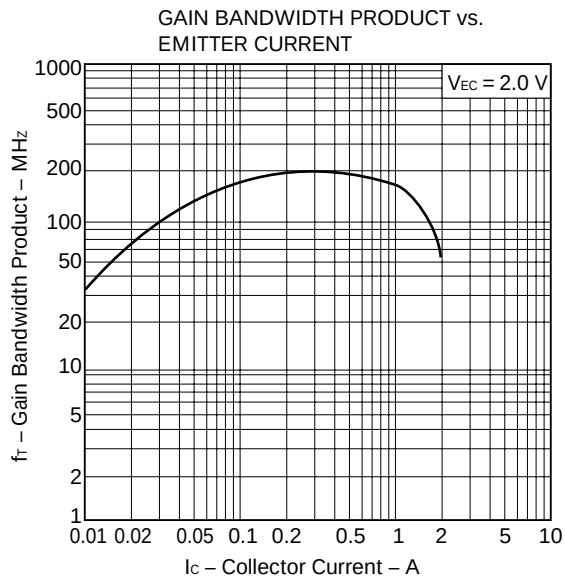
*** Pulsed: $PW \leq 350\text{ }\mu\text{s}$, Duty Cycle ≤ 2 %

h_{FE} Classification

MARKING	2SD1615	GM	GL	GK
	2SD1615A	GQ	GP	
h_{FE}		135 to 270	200 to 400	300 to 600

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





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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Anti-radioactive design is not implemented in this product.