

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

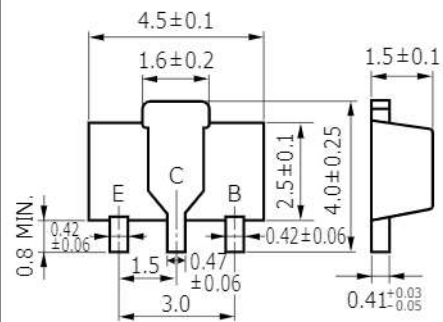
Maximum Voltages and Currents ($T_A = 25$ °C)	2SD1615	2SD1615A	
Collector to Base Voltage	V_{CBO} 60	120	V
Collector to Emitter Voltage	V_{CEO} 50	60	V
Emitter to Base Voltage	V_{EBO}	6	A
Collector Current (DC)	I_C	1	A
Collector Current (Pulse)*	I_C	2	A
Maximum Power Dissipation			
Total Power Dissipation			
at 25 °C Ambient Temperature**	P_T	2.0	W
Maximum Temperatures			
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	-55 to +150	°C

* $PW \leq 10$ ms, Duty Cycle ≤ 50 %

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

PACKAGE DIMENSIONS

in millimeters



1. Emitter
2. Collector
3. Base

ELECTRICAL CHARACTERISTICS ($T_A = 25$ °C)

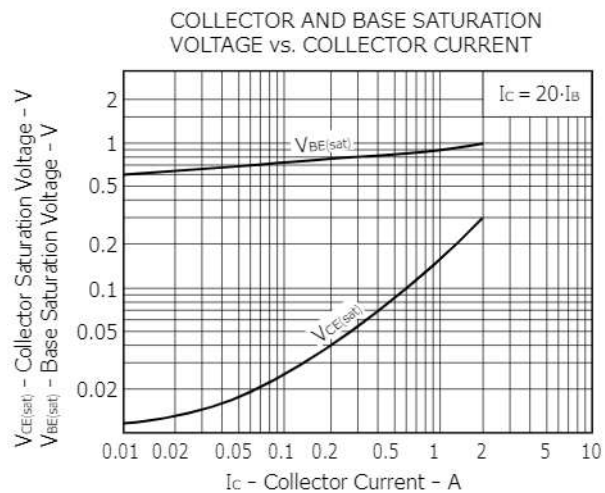
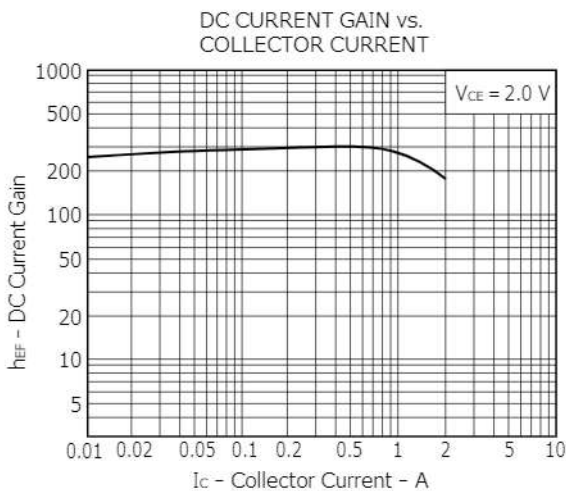
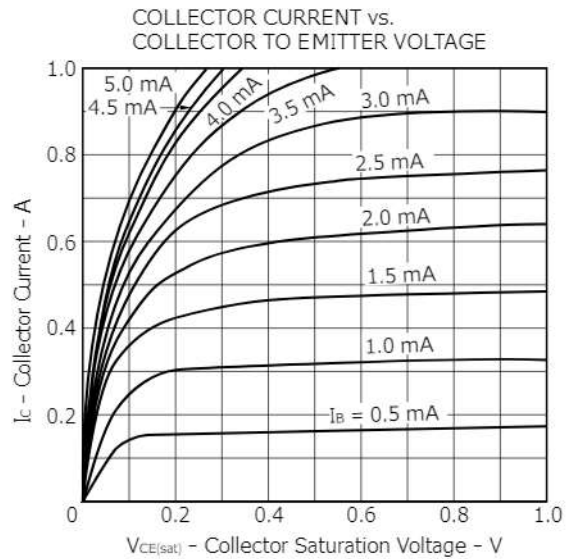
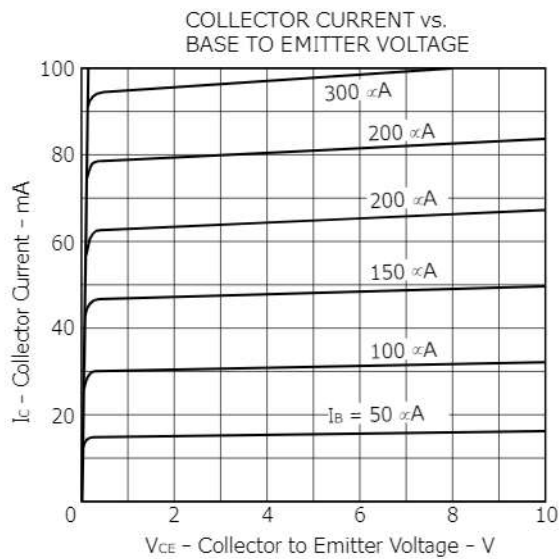
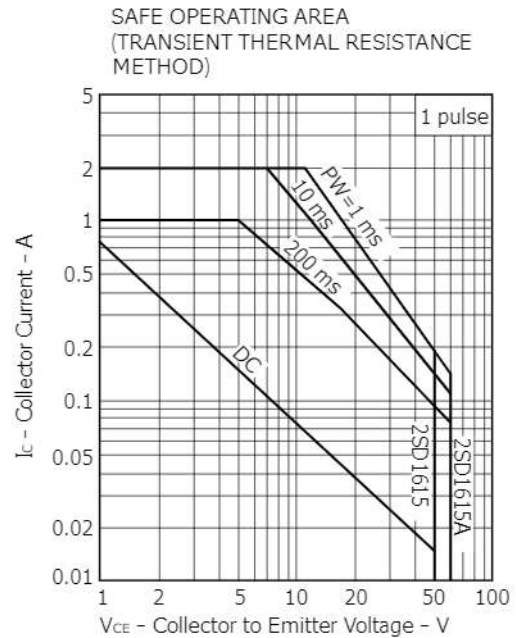
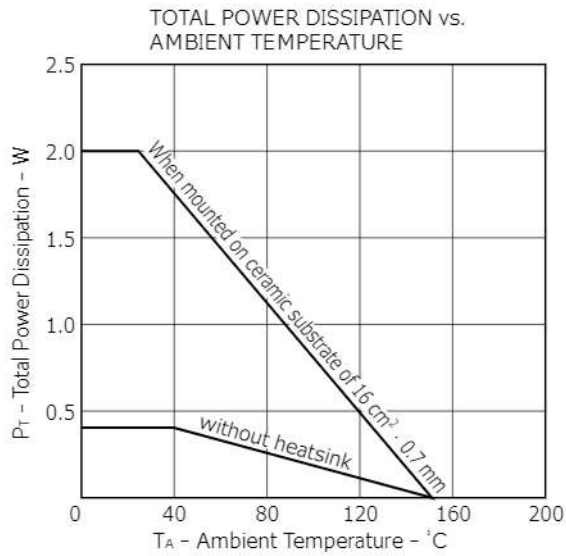
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS	
Collector Cutoff Current	I_{CBO}			100	nA	2SD1615	$V_{CB} = 60$ V, $I_E = 0$
				100	nA	2SD1615A	$V_{CB} = 120$ V, $I_E = 0$
Emitter Cutoff Current	I_{EBO}			100	nA	$V_{EB} = 6.0$ V, $I_C = 0$	
DC Current Gain	h_{FE1}^{***}	135	290	600		2SD1615	$V_{CE} = 2.0$ 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	

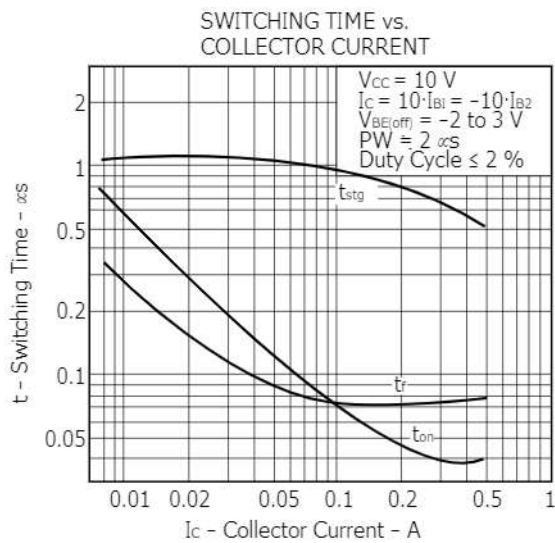
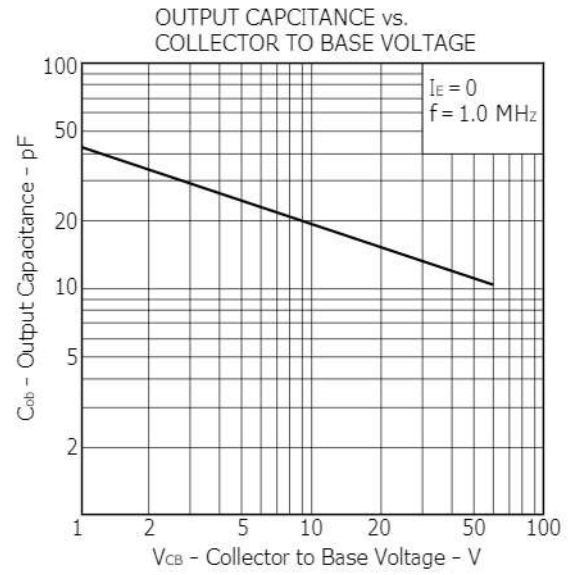
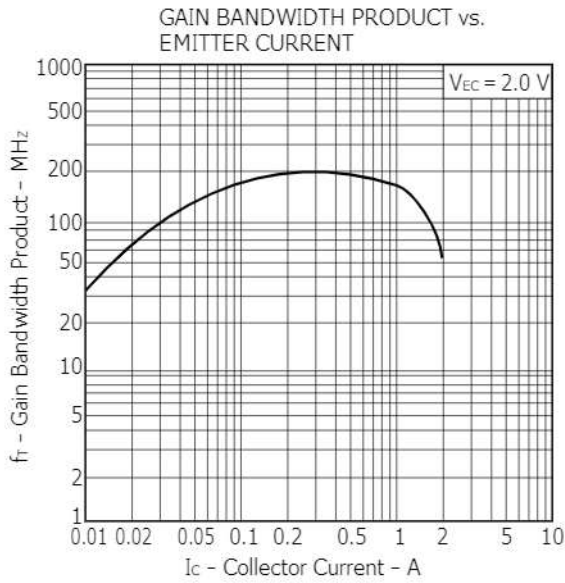
*** Pulsed: $PW \leq 350$ μ s, Duty Cycle ≤ 2 %

h_{FE} Classification

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

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





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.