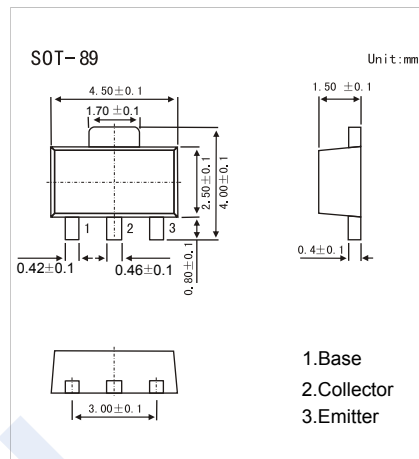


NPN Transistors

2SD1615

■ Features

- Low $V_{CE(sat)}$
- Complementary to 2SB1115



■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	60	V
Collector - Emitter Voltage	V_{CEO}	50	
Emitter - Base Voltage	V_{EBO}	6	
Collector Current - Continuous	I_C	1	A
Collector Current - Pulse (Note.1)	I_{CP}	2	
Collector Power Dissipation	P_C	2	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to 150	

Note.1: $PW \leq 10 \text{ ms}$, Duty cycle $\leq 20\%$.

■ Electrical Characteristics $T_a = 25^\circ\text{C}$

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V_{CBO}	$I_C = 100 \mu\text{A}$, $I_E = 0$	60			V
Collector- emitter breakdown voltage	V_{CEO}	$I_C = 1 \text{ mA}$, $I_B = 0$	50			
Emitter - base breakdown voltage	V_{EBO}	$I_E = 100 \mu\text{A}$, $I_C = 0$	6			
Collector-base cut-off current	I_{CBO}	$V_{CB} = 60 \text{ V}$, $I_E = 0$			0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 6 \text{ V}$, $I_C = 0$			0.1	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 1 \text{ A}$, $I_B = 50 \text{ mA}$		0.15	0.3	V
Base - emitter saturation voltage	$V_{BE(sat)}$	$I_C = 1 \text{ A}$, $I_B = 50 \text{ mA}$		0.9	1.2	
Base - emitter voltage	V_{BE}	$V_{CE} = 2 \text{ V}$, $I_C = 50 \text{ mA}$	0.6		0.7	
DC current gain	h_{FE}	$V_{CE} = 2 \text{ V}$, $I_C = 100 \text{ mA}$	135	290	600	
		$V_{CE} = 2 \text{ V}$, $I_C = 1 \text{ A}$	81	270		
Collector output capacitance	C_{ob}	$V_{CB} = 10 \text{ V}$, $I_E = 0$, $f = 1 \text{ MHz}$		19		pF
Transition frequency	f_T	$V_{CE} = 2 \text{ V}$, $I_E = -100 \text{ mA}$	80	160		MHz

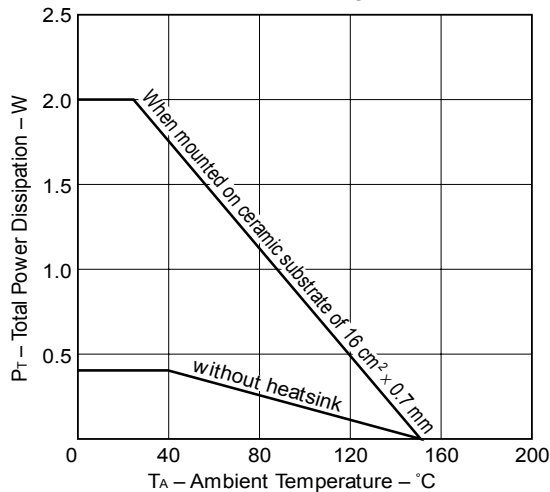
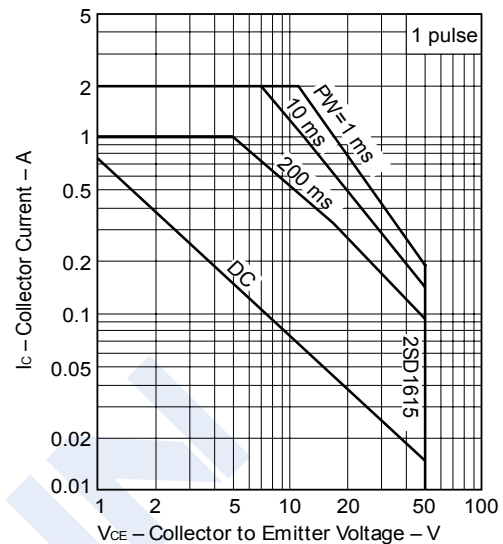
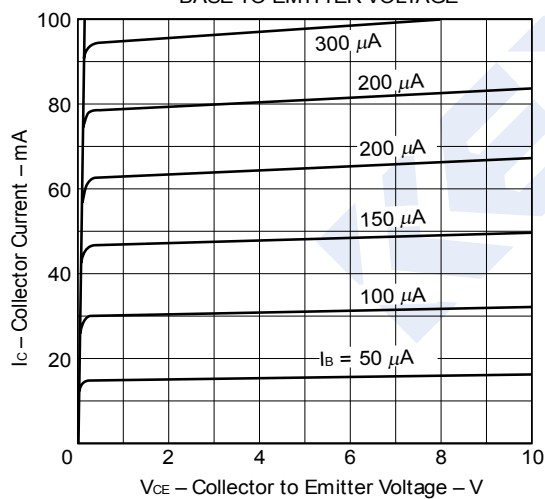
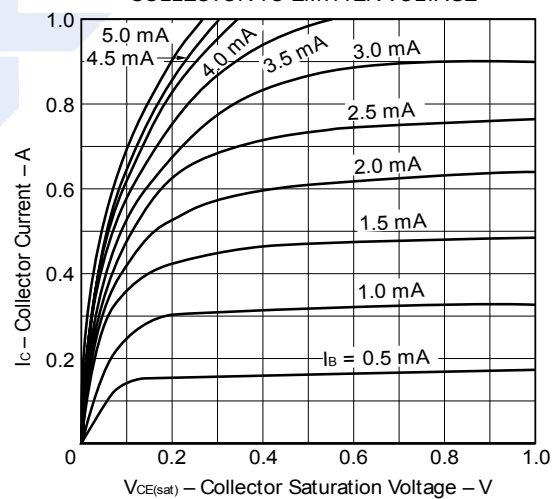
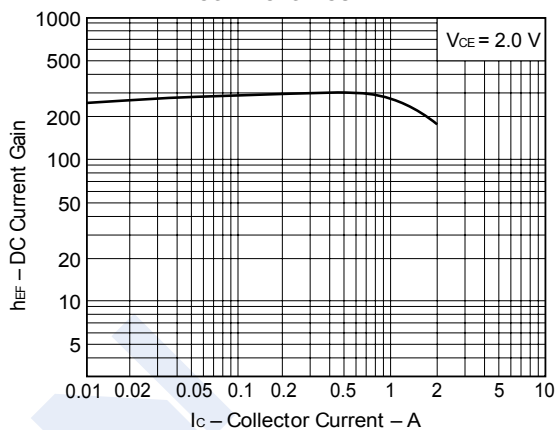
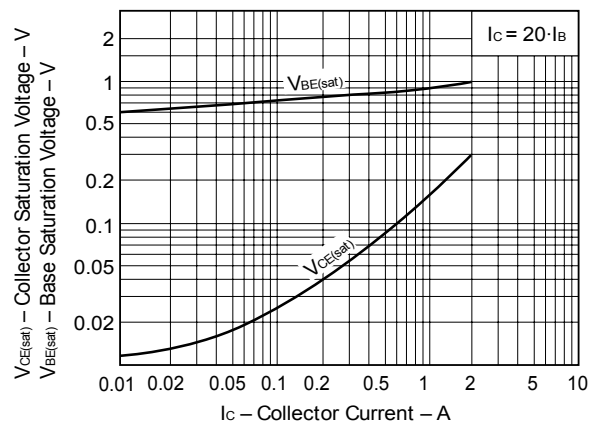
■ Classification of $h_{FE}(1)$

Type	2SD1615-M	2SD1615-L	2SD1615-K
Range	135-270	200-400	300-600
Marking	GM	GL	GK

NPN Transistors

2SD1615

■ Typical Characteristics

TOTAL POWER DISSIPATION vs.
AMBIENT TEMPERATURESAFE OPERATING AREA
(TRANSIENT THERMAL RESISTANCE
METHOD)COLLECTOR CURRENT vs.
BASE TO EMITTER VOLTAGECOLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGEDC CURRENT GAIN vs.
COLLECTOR CURRENTCOLLECTOR AND BASE SATURATION
VOLTAGE vs. COLLECTOR CURRENT

NPN Transistors

2SD1615

■ Typical Characteristics

