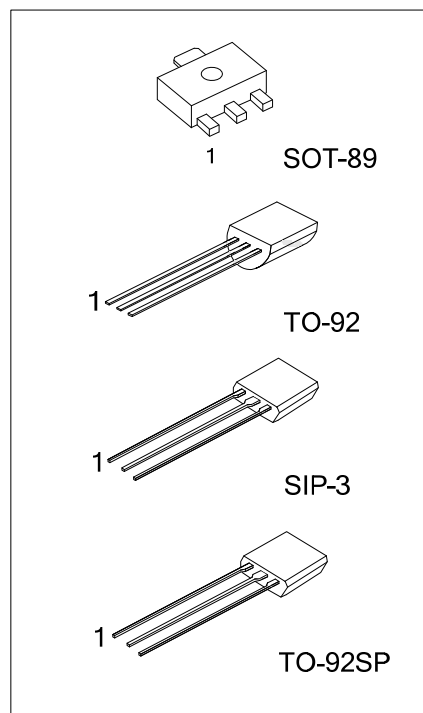


**2SD1616/A****NPN SILICON TRANSISTOR****NPN EPITAXIAL SILICON TRANSISTOR****DESCRIPTION**

* Audio frequency power amplifier

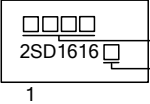
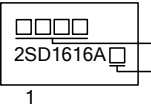
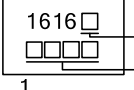
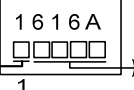
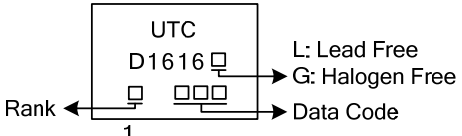
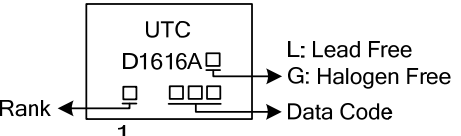
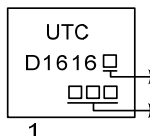
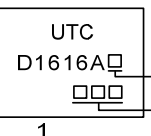
* Medium speed switching

**ORDERING INFORMATION**

Ordering Number		Package	Pin Assignment			Packing
Lead Free Plating	Halogen-Free		1	2	3	
2SD1616L-x-AB3-R	2SD1616G-x-AB3-R	SOT-89	B	C	E	Tape Reel
2SD1616L-x-G03-K	2SD1616G-x-G03-K	SIP-3	E	C	B	Bulk
2SD1616L-x-T92-B	2SD1616G-x-T92-B	TO-92	E	C	B	Tape Box
2SD1616L-x-T92-K	2SD1616G-x-T92-K	TO-92	E	C	B	Bulk
2SD1616L-x-T9S-K	2SD1616G-x-T9S-K	TO-92SP	E	C	B	Bulk
2SD1616AL-x-AB3-R	2SD1616AG-x-AB3-R	SOT-89	B	C	E	Tape Reel
2SD1616AL-x-G03-K	2SD1616AG-x-G03-K	SIP-3	E	C	B	Bulk
2SD1616AL-x-T92-B	2SD1616AG-x-T92-B	TO-92	E	C	B	Tape Box
2SD1616AL-x-T92-K	2SD1616AG-x-T92-K	TO-92	E	C	B	Bulk
2SD1616AL-x-T9S-K	2SD1616AG-x-T9S-K	TO-92SP	E	C	B	Bulk

	(1)Packing Type	(1) B: Tape Box, K: Bulk, R: Tape Reel (2) AB3: SOT-89, G03: SIP-3, T92: TO-92, T9S: TO-92S (3) x: refer to Classification of h_{FE1} (4) L: Lead Free, G: Halogen Free
	(2)Package Type	
	(3)Rank	
	(4)Lead Plating	

MARKING

PACKAGE	MARKING	
	2SD1616	2SD1616A
SOT-89	 1 → Date Code → L: Lead Free → G: Halogen Free	 1 → Date Code → L: Lead Free → G: Halogen Free
SIP-3	 1 → L: Lead Free → G: Halogen Free → Date Code	 1 → L: Lead Free → G: Halogen Free → Date Code
TO-92	 Rank 1 → L: Lead Free → G: Halogen Free → Data Code	 Rank 1 → L: Lead Free → G: Halogen Free → Data Code
TO-92SP	 1 → L: Lead Free → G: Halogen Free → Data Code	 1 → L: Lead Free → G: Halogen Free → Data Code

■ **ABSOLUTE MAXIMUM RATINGS** ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector to Base Voltage	2SD1616	60	V
	2SD1616A	120	
Collector to Emitter Voltage	2SD1616	50	V
	2SD1616A	60	
Emitter to Base Voltage	V_{EBO}	6	V
Collector Current	DC	1	A
	Pulse(Note2)	2	A
Total Power Dissipation	P_C	750	mW
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. Pulse width $\leq$ 10ms, Duty cycle $<$ 50%.

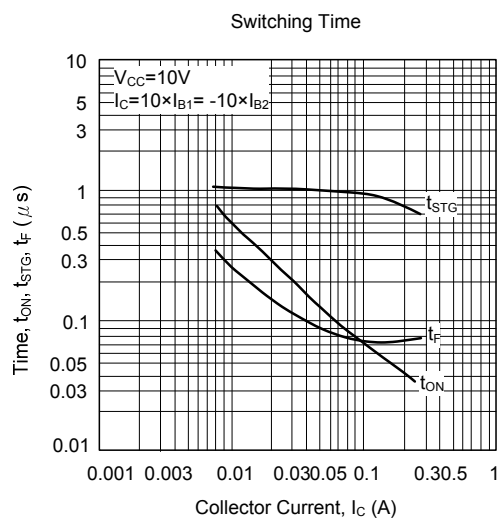
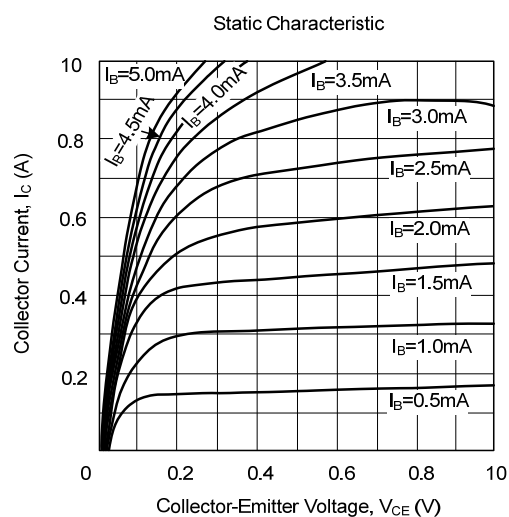
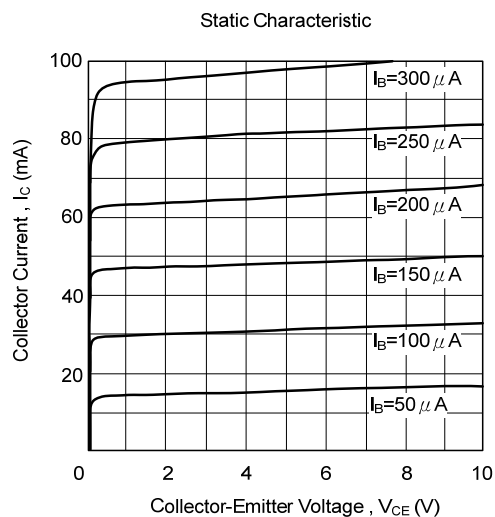
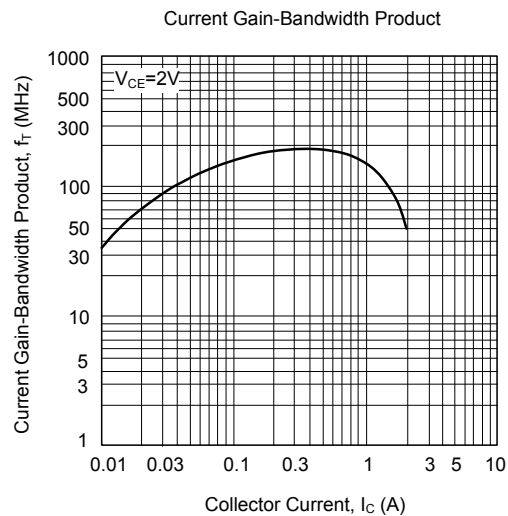
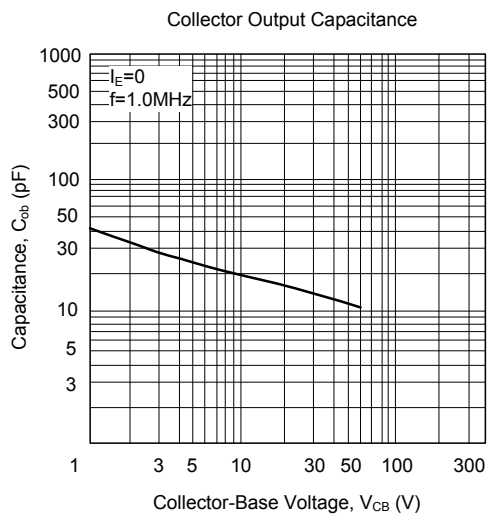
■ **ELECTRICAL CHARACTERISTICS** ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=1A, I_B=50mA$		0.15	0.3	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=1A, I_B=50mA$		0.9	1.2	V
Base Emitter On Voltage	$V_{BE(ON)}$	$V_{CE}=2V, I_C=50mA$	600	640	700	mV
Collector Cut-Off Current	I_{CBO}	$V_{CB}=60V$			100	nA
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=6V$			100	nA
DC Current Gain	h_{FE1}	$V_{CE}=2V, I_C=100mA$	2SD1616	135	600	
			2SD1616A	135	400	
	h_{FE2}	$V_{CE}=2V, I_C=1A$	81			
Transition Frequency	f_T	$V_{CE}=2V, I_C=100mA$	100	160		MHz
Output Capacitance	C_{ob}	$V_{CB}=10V, f=1MHz$			19	pF
Turn On Time	t_{ON}	$V_{CE}=10V, I_C=100mA$		0.07		μs
Storage Time	t_{STG}	$I_{B1} = -I_{B2} = 10mA$		0.95		μs
Fall Time	t_F	$V_{BE(OFF)} = -2 \sim -3V$		0.07		μs

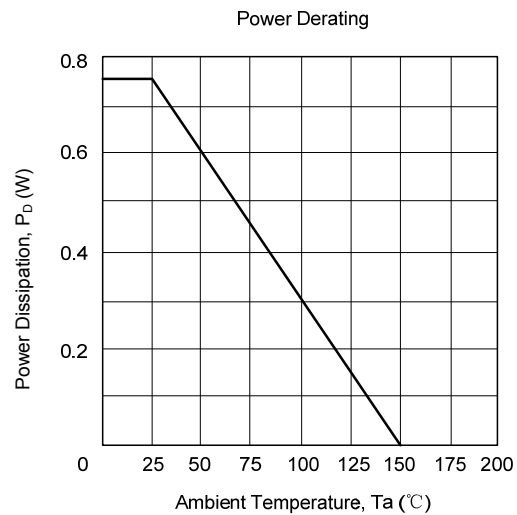
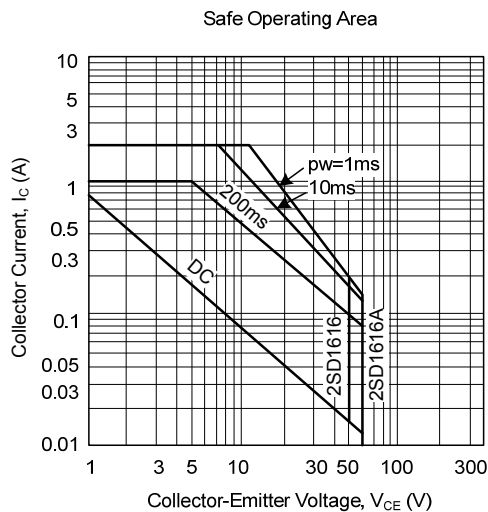
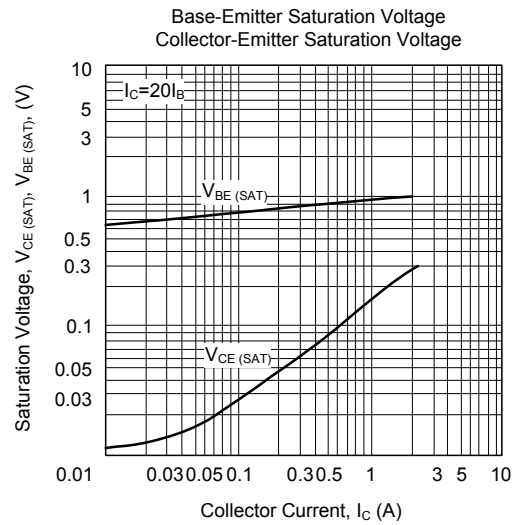
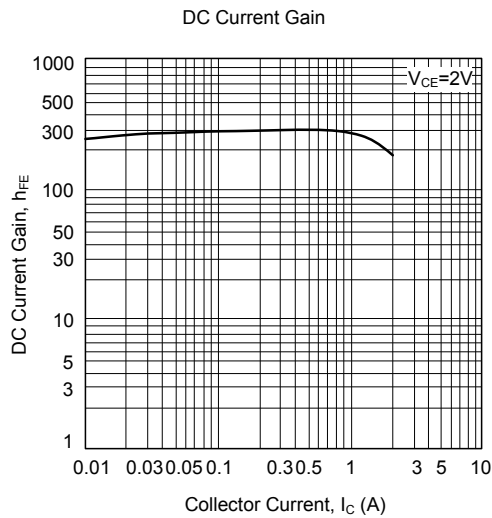
■ **CLASSIFICATION OF h_{FE1}**

RANK	Y	G	L
h_{FE1}	135 ~ 270	200 ~ 400	300 ~ 600

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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