



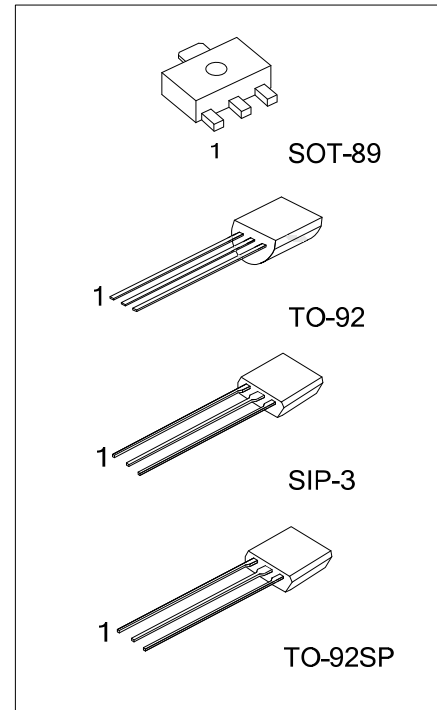
# 2SD1616/A

## 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	
-	2SD1616G-x-AB3-R	SOT-89	B	C	E	Tape Reel
-	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
-	2SD1616AG-x-AB3-R	SOT-89	B	C	E	Tape Reel
-	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

Note: Pin Assignment: C: Collector B: Base E: Emitter

<p>2SD1616G-x-AB3-R</p> <ul style="list-style-type: none"> <li>(1) Packing Type</li> <li>(2) Package Type</li> <li>(3) Rank</li> <li>(4) Green Package</li> </ul>	<ul style="list-style-type: none"> <li>(1) B: Tape Box, K: Bulk, R: Tape Reel</li> <li>(2) AB3: SOT-89, G03: SIP-3, T92: TO-92, T9S: TO-92S</li> <li>(3) x: refer to Classification of <math>h_{FE1}</math></li> <li>(4) G: Halogen Free and Lead Free, L: Lead Free</li> </ul>
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## MARKING

PACKAGE	MARKING	
	2SD1616	2SD1616A
SOT-89		
SIP-3		
TO-92		
TO-92SP		

■ 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%.

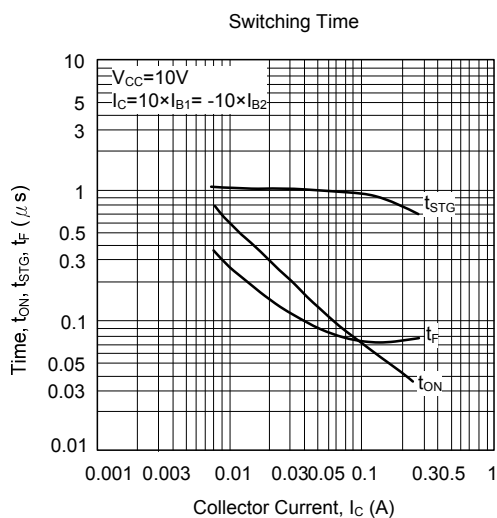
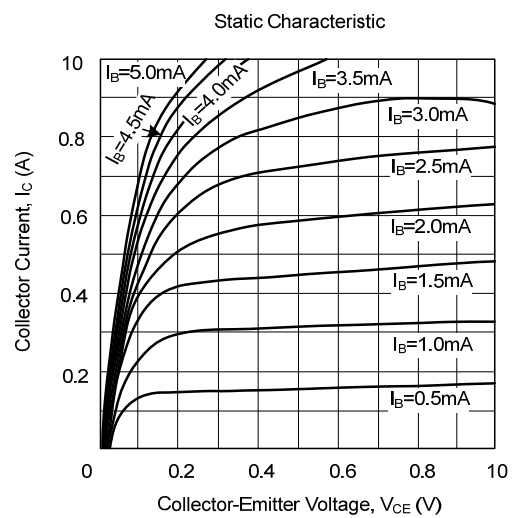
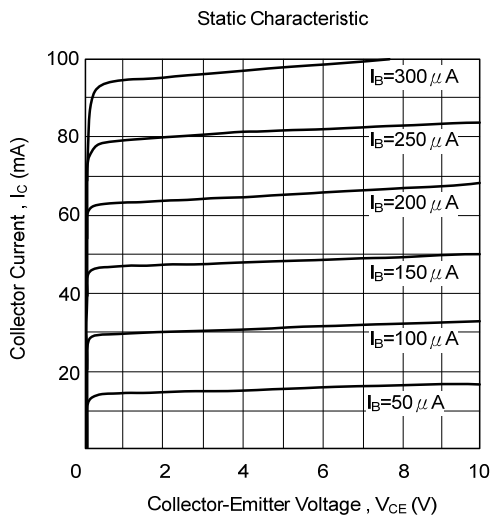
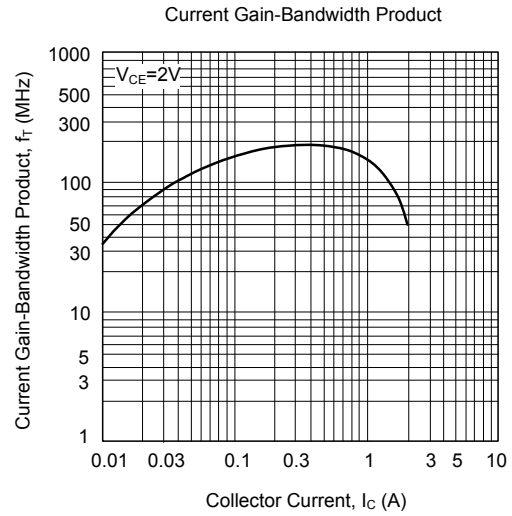
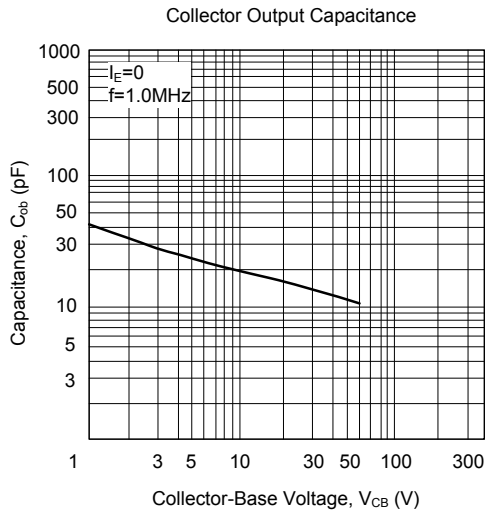
■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

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	$h_{FE1}$	$V_{CE}=2V, I_C=100mA$	135		600	
	$h_{FE2}$	$V_{CE}=2V, I_C=1A$	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		$\mu\text{s}$
Storage Time	$t_{STG}$	$I_{B1} = -I_{B2} = 10mA$		0.95		$\mu\text{s}$
Fall Time	$t_F$	$V_{BE(OFF)} = -2 \sim -3V$		0.07		$\mu\text{s}$

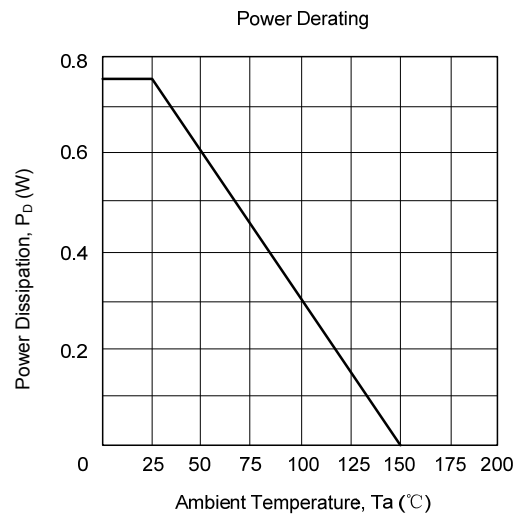
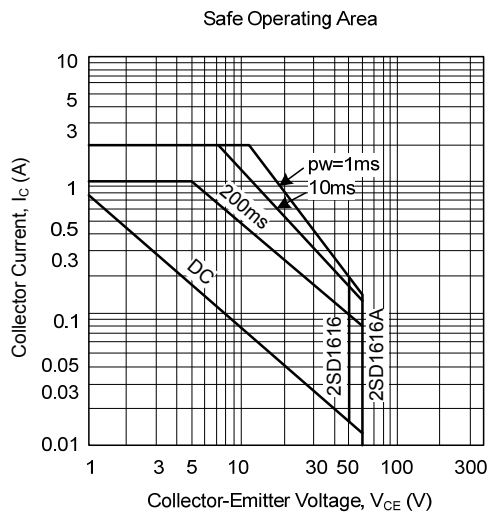
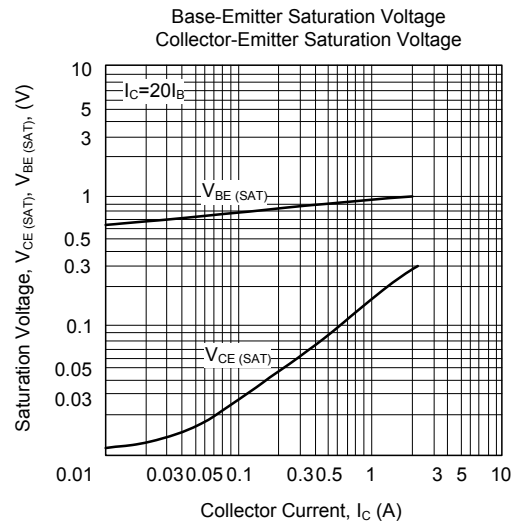
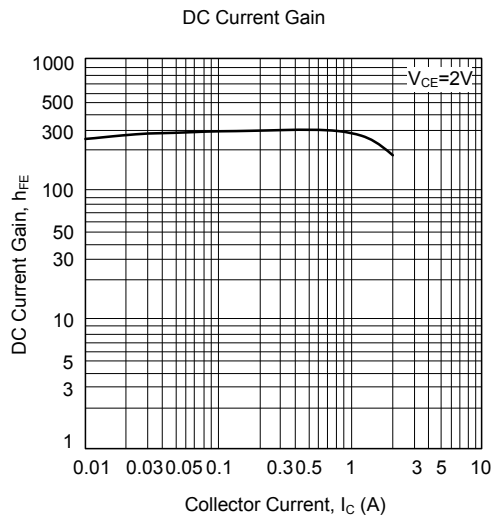
■ CLASSIFICATION OF  $h_{FE1}$

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

### TYPICAL CHARACTERISTICS



### TYPICAL CHARACTERISTICS(Cont.)



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