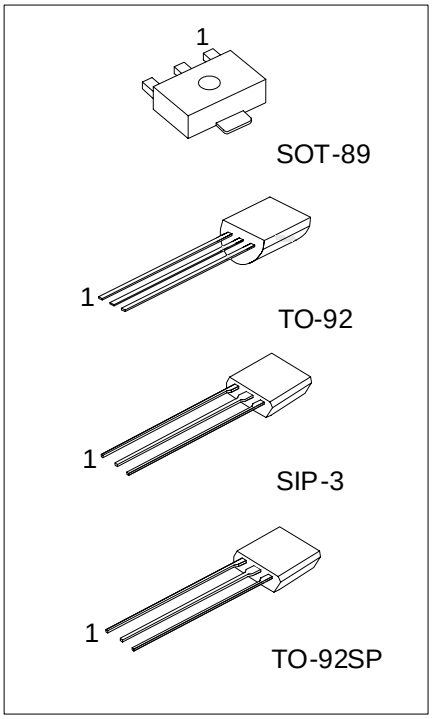
2SD1616/A

NPN SILICON TRANSISTOR

NPN EPITAXIAL SILICON TRANSISTOR



*Pb-free plating product number:
2SD1616L/2SD1616AL

■ DESCRIPTION

* Audio frequency power amplifier
* Medium speed switching

■ ORDERING INFORMATION

Order Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
2SD1616-x-AB3-R	2SD1616L-x-AB3-R	SOT-89	B	C	E	Tape Reel
2SD1616-x-G03-K	2SD1616L-x-G03-K	SIP-3	E	C	B	Bulk
2SD1616-x-T92-B	2SD1616L-x-T92-B	TO-92	E	C	B	Tape Box
2SD1616-x-T92-K	2SD1616L-x-T92-K	TO-92	E	C	B	Bulk
2SD1616-x-T9S-K	2SD1616L-x-T9S-K	TO-92SP	E	C	B	Bulk
2SD1616A-x-AB3-R	2SD1616AL-x-AB3-R	SOT-89	B	C	E	Tape Reel
2SD1616A-x-G03-K	2SD1616AL-x-G03-K	SIP-3	E	C	B	Bulk
2SD1616A-x-T92-B	2SD1616AL-x-T92-B	TO-92	E	C	B	Tape Box
2SD1616A-x-T92-K	2SD1616AL-x-T92-K	TO-92	E	C	B	Bulk
2SD1616A-x-T9S-K	2SD1616AL-x-T9S-K	TO-92SP	E	C	B	Bulk

2SD1616L-x-AB3-T
(1)Packing Type
(2)Package Type
(3)Rank
(4)Lead Plating

(1) B: Tape Box, K: Bulk, R: Tape Reel, T: Tube
(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 Plating, Blank: Pb/Sn

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■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

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

Note: 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≤10ms, Duty cycle<50%

■ ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise specified.)

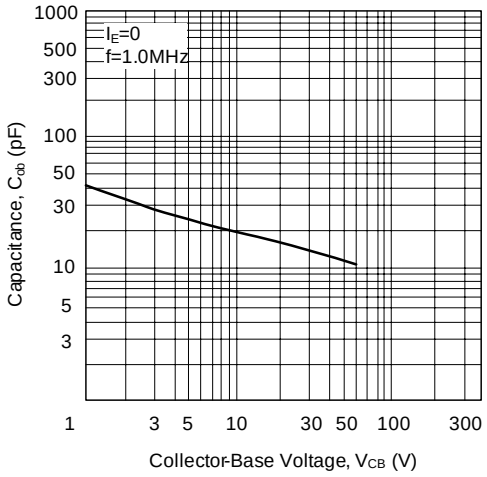
PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Collector-Emitter Saturation Voltage	$V_{CE\ (SAT)}$	I_C=1A, I_B=50mA			0.15	0.3	V
Base-Emitter Saturation Voltage	$V_{BE\ (SAT)}$	I_C=1A, I_B=50mA			0.9	1.2	V
Base Emitter On Voltage	$V_{BE\ (ON)}$	V_{CE} =2V, I_C =50mA		600	640	700	mV
Collector Cut-Off 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 ~ -3V			0.07		μs

■ CLASSIFICATION OF h_{FE1}

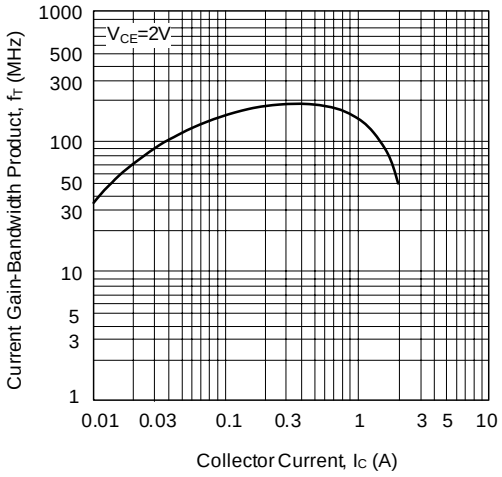
RANK	Y	G	L
h_{FE1}	135 ~ 270	200 ~ 400	300 ~ 600

■ TYPICAL CHARACTERISTICS

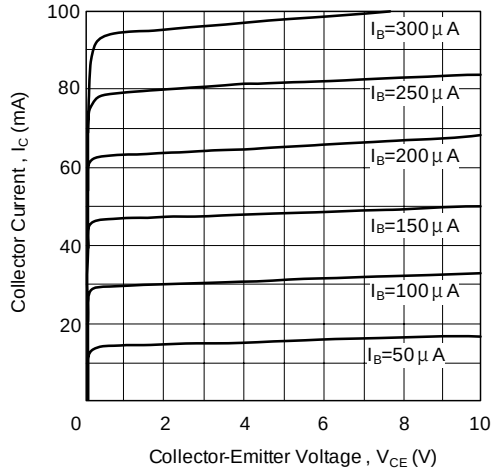
Collector Output Capacitance



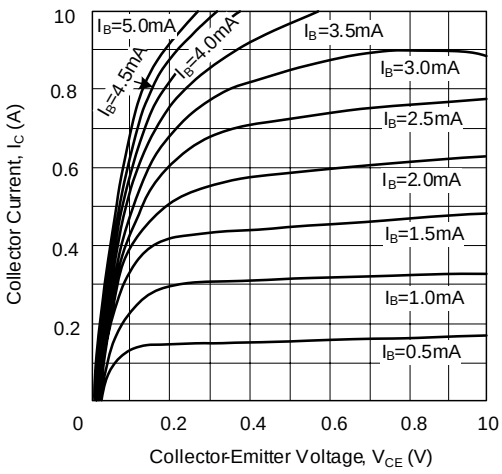
Current Gain-Bandwidth Product



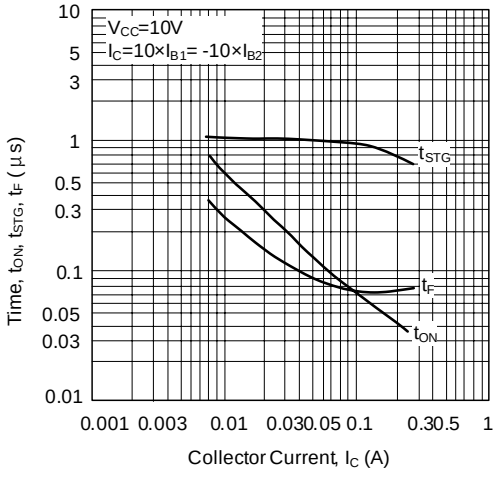
Static Characteristic



Static Characteristic

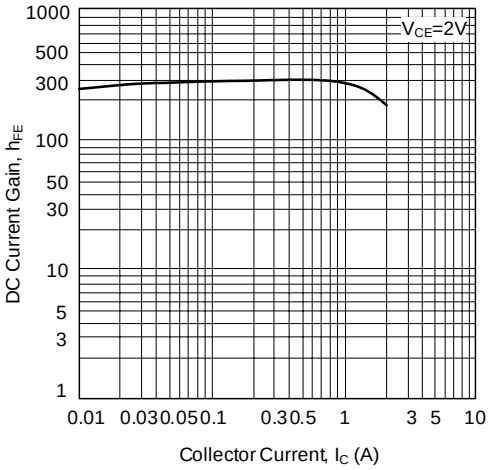


Switching Time

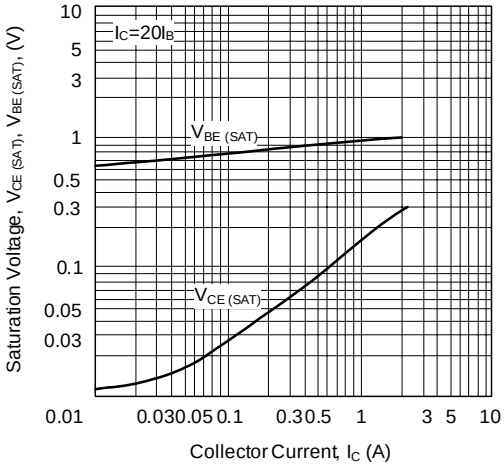


■ TYPICAL CHARACTERISTICS(Cont.)

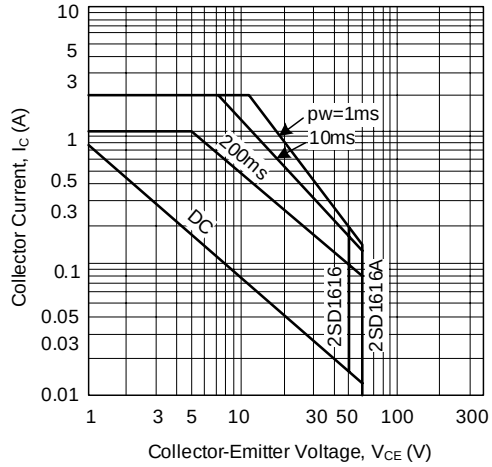
DC Current Gain



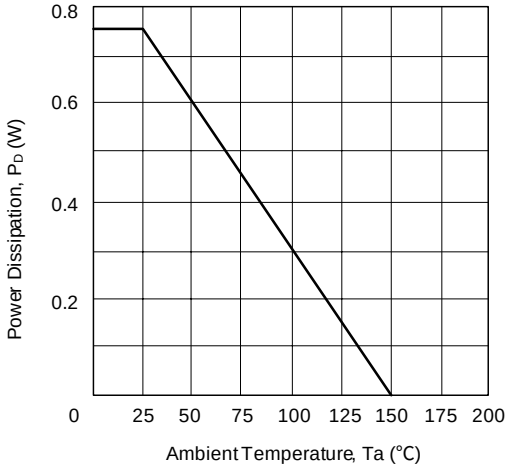
Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage



Safe Operating Area



Power Derating



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