



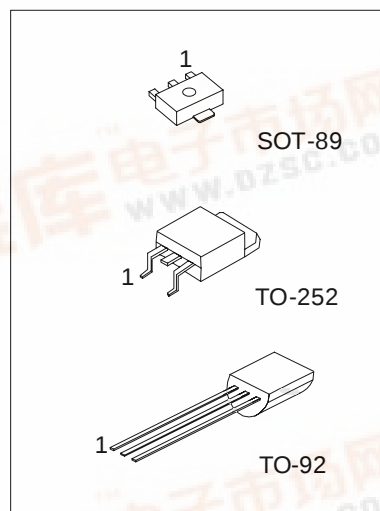
UNISONIC TECHNOLOGIES CO., LTD

2SD965/A**NPN SILICON TRANSISTOR****LOW VOLTAGE HIGH
CURRENT TRANSISTOR**■ **FEATURES**

- * Collector current up to 5A
- * UTC **2SD965**: Collector-Emitter voltage up to 20 V
- * UTC **2SD965A**: Collector-Emitter voltage up to 30 V

■ **APPLICATIONS**

- * Audio amplifier
- * Flash unit of camera
- * Switching circuit



*Pb-free plating product number:
2SD965L/2SD965AL

■ **ORDERING INFORMATION**

Order Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
2SD965-x-AB3-R	2SD965L-x-AB3-R	SOT-89	B	C	E	Tape Reel
2SD965-x-T92-B	2SD965L-x-T92-B	TO-92	E	C	B	Tape Box
2SD965-x-T92-K	2SD965L-x-T92-K	TO-92	E	C	B	Bulk
2SD965-x-TN3-R	2SD965L-x-TN3-R	TO-252	B	C	E	Tape Reel
2SD965-x-TN3-T	2SD965L-x-TN3-T	TO-252	B	C	E	Tube
2SD965A-x-AB3-R	2SD965AL-x-AB3-R	SOT-89	B	C	E	Tape Reel
2SD965A-x-T92-B	2SD965AL-x-T92-B	TO-92	E	C	B	Tape Box
2SD965A-x-T92-K	2SD965AL-x-T92-K	TO-92	E	C	B	Bulk
2SD965A-x-TN3-R	2SD965AL-x-TN3-R	TO-252	B	C	E	Tape Reel
2SD965A-x-TN3-T	2SD965AL-x-TN3-T	TO-252	B	C	E	Tube

2SD965L-x-AB3-R (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, T92: TO-92, TN3: TO-252 (3) x: refer to Classification of h_{FE2} (4) L: Lead Free Plating, Blank: Pb/Sn
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2SD965/A

NPN SILICON TRANSISTOR

■ ABSOLUTE MAXIMUM RATING (Ta=25 °C)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Base Voltage	V_{CBO}	40	V
Collector-Emitter Voltage	V_{CEO}	20	V
		30	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Dissipation	SOT-89	500	mW
	TO-92	750	mW
	TO-252	1	W
Collector Current	I_C	5	A
Junction Temperature	T_J	150	
Storage Temperature	T_{STG}	-65 ~ +150	

Note: 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.

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

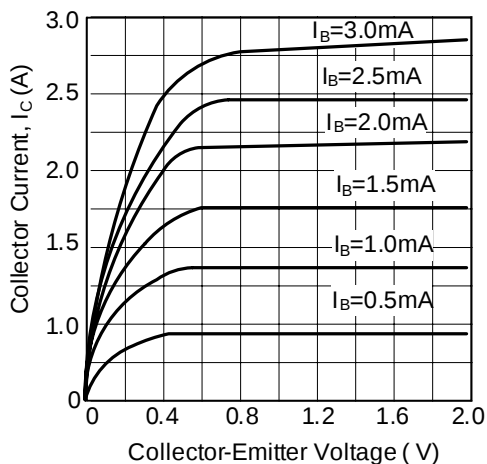
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C=100\mu A, I_E=0$	40			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C=1mA, I_B=0$	20			V
			30			V
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_E=10\mu A, I_C=0$	7			V
Collector Cut-off Current	I_{CBO}	$V_{CB}=10V, I_E=0$			100	nA
Emitter Cut-off Current	I_{EBO}	$V_{EB}=7V, I_C=0$			100	nA
DC Current Gain(note)	h_{FE}	$V_{CE}=2V, I_C=1mA$		200		
		$V_{CE}=2V, I_C=0.5A$	230		800	
		$V_{CE}=2V, I_C=2A$	150			
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=3A, I_B=0.1A$			1	V
Current Gain Bandwidth Product	f_T	$V_{CE}=6V, I_C=50mA$		150		MHz
Output Capacitance	C_{ob}	$V_{CB}=20V, I_E=0, f=1MHz$			50	pF

■ CLASSIFICATION OF h_{FE2}

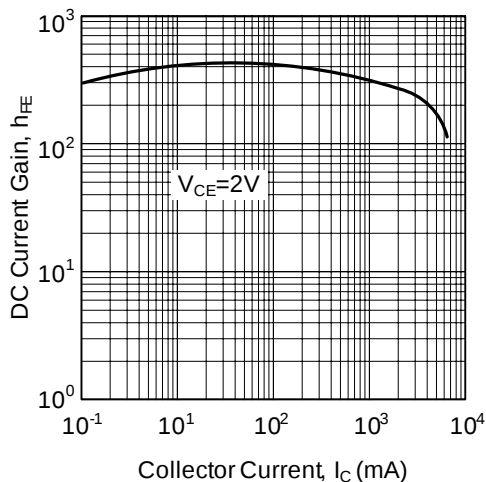
RANK	Q	R	S
RANGE	230-380	340-600	560-800

TYPICAL CHARACTERISTICS

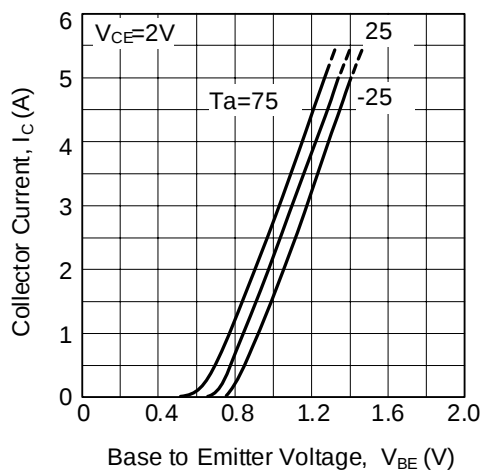
Static Characteristics



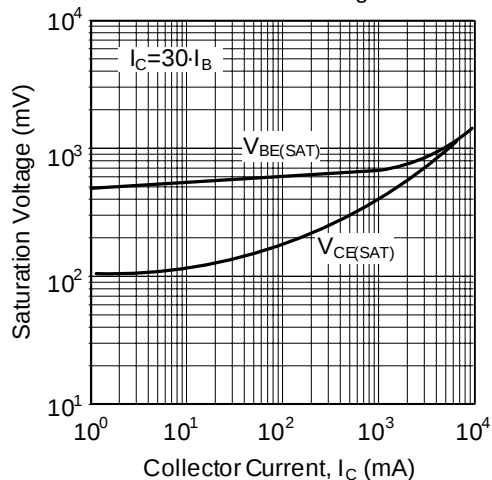
DC Current Gain



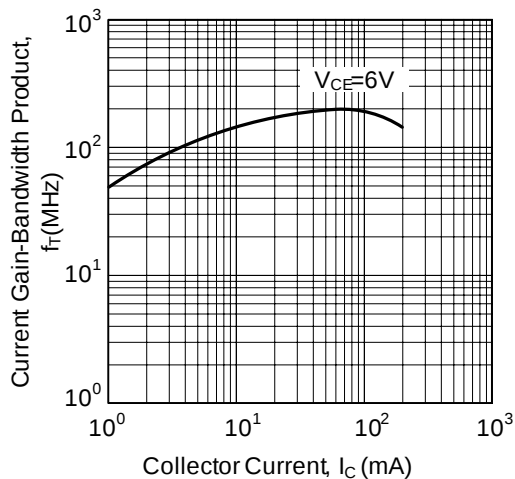
Base-Emitter on Voltage



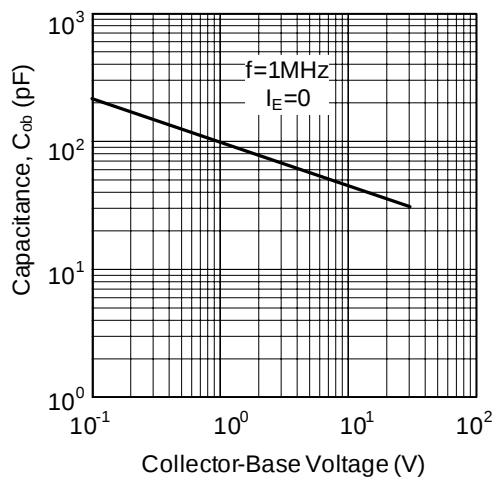
Saturation Voltage



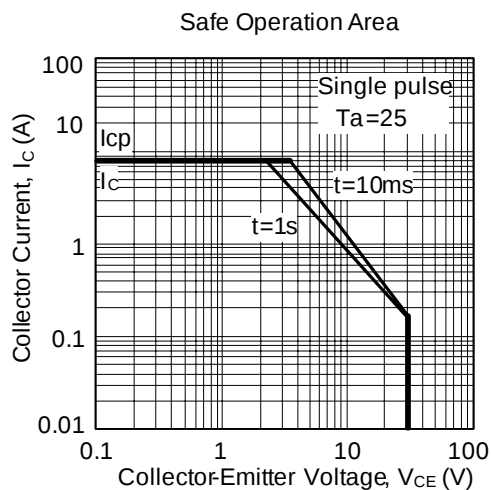
Current Gain-Bandwidth Product



Collector Output Capacitance



■ TYPICAL CHARACTERISTICS



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