



**General
Semiconductor
Industries, Inc.**

SQUARE D COMPANY

**2N 2877
2N 2878
2N 2879
2N 2880**

T-33-09

**NPN SILICON
HIGH-POWER
TRANSISTORS**

DIFFUSED SILICON EPITAXIAL PASSIVATED TRANSISTOR

These devices are designed for use in power amplifiers and switching applications. The latest technologies are used to offer the highest degree of reliability.

FEATURES

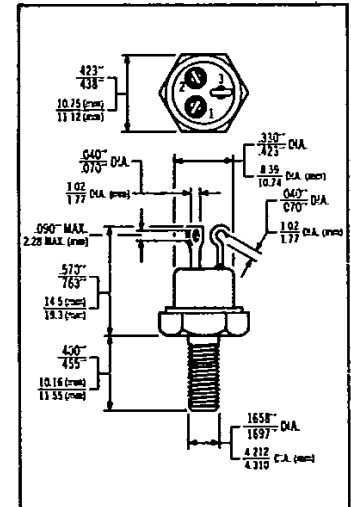
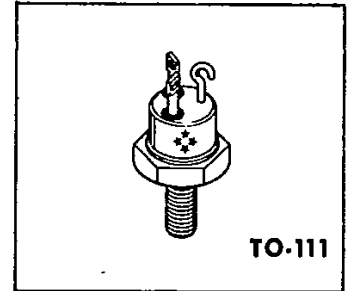
- Low Saturation Voltage
- High Frequency Response
- Fast Switching
- Low Leakage Current
- Low Drive Requirement

APPLICATIONS

- High Frequency Inverters
- Converters
- Linear Amplifiers
- High Speed Switching Regulated Power Supplies
- RF Power Amplifiers

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures	
Storage Temperatures	-65°C to +200°C
Operating Junction Temperature	+200°C
Lead Temperature (soldering, 60 second time limit)	+300°C
Maximum Power Dissipation	
Total Dissipation at 100°C Case Temperature	30 Watts
(1) See Safe Operating Curves for derating	
Linear derating factor	.3W/°C
Maximum Voltages and Current	
V _{CE0} Collector to Emitter Voltage	2N2877 2N2878 60 Volts 80 Volts
V _{CB0} Collector to Base Voltage	80 Volts 100 Volts
V _{EB0} Emitter to Base Voltage	8 Volts 8 Volts
I _C Collector Current	5 Amps 5 Amps



MECHANICAL CHARACTERISTICS

Case: TO-111 Package
 Weight: 6.5 grams (Maximum)
 Leads: Tin Plated Kovar
 1. Emitter 2. Base 3. Collector
 Body marked with Logo and type number

***ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)**

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	2N2877		2N2878		2N2879		2N2880		UNITS
			MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
Collector to Base Breakdown Voltage	BV _{CB0}	I _C = 10μA, I _E = 0	80		80		100		100		Volts
Collector to Emitter Sustaining Voltage	V _{CE0 (sust)}	I _C = 100mA, I _B = 0	60		60		70		70		Volts
Collector to Emitter Breakdown Voltage	BV _{CE0}	I _C = 10mA, I _B = 0	60		60		80		80		Volts
Emitter to Base Breakdown Voltage	BV _{EB0}	I _E = 10μA, I _C = 0	8		8		8		8		Volts
† DC Pulse Current Gain	h _{FE}	I _C = 1A, V _{CE} = 2V	20	60	40	120	20	60	40	120	
† DC Pulse Current Gain	h _{FE}	I _C = 5A, V _{CE} = 5V	10		15		10		15		
† DC Pulse Current Gain	h _{FE}	I _C = 1A, V _{CE} = 2V @ T _C = -55°C	10		10		10		10		
† Pulsed Collector Saturation	V _{CE (sat)}	I _C = 1A, I _B = 0.1A		0.25		0.25		0.25		0.25	Volts
		I _C = 5A, I _B = 0.5A		2.0		2.0		2.0		2.0	Volts
† Pulsed Base Emitter Voltage	V _{BE}	I _C = 1A, V _{CE} = 2V		1.2		1.2		1.2		1.2	Volts
† Pulsed Base Saturation Voltage	V _{BE (sat)}	I _C = 1A, I _B = 0.1A		1.2		1.2		1.2		1.2	Volts
Collector Cutoff Current	I _{CB0}	V _{CB} = 60V, I _E = 0		0.1		0.1		0.1		0.1	μAmp
Collector Cutoff Current	I _{CE0}	V _{CE} = 50V, I _B = 0		100		100		100		100	μAmp
Collector Cutoff Current	I _{EB0}	V _{EB} = 5V, I _C = 0		0.1		0.1		0.1		0.1	μAmp
Collector Cutoff Current	I _{EB0}	V _{EB} = 8V, I _C = 0		10		10		10		10	μAmp
Collector Cutoff Current	I _{CEX}	V _{EB} = 0.5V, V _{CE} = 60V @ T _C = 150°C		50		50		50		50	μAmp

*JEDEC registered data. † Pulse Conditions: Width = 10μs; Duty Cycle ≤ 2% (measured using Kelvin connections).

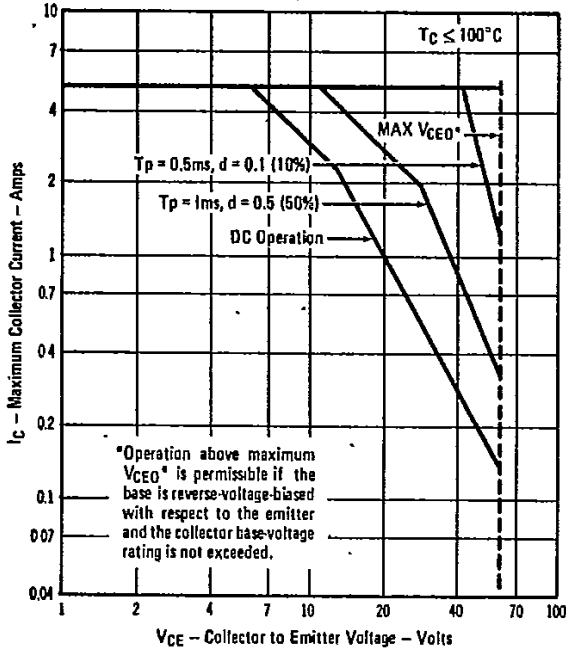
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*DYNAMIC CHARACTERISTICS

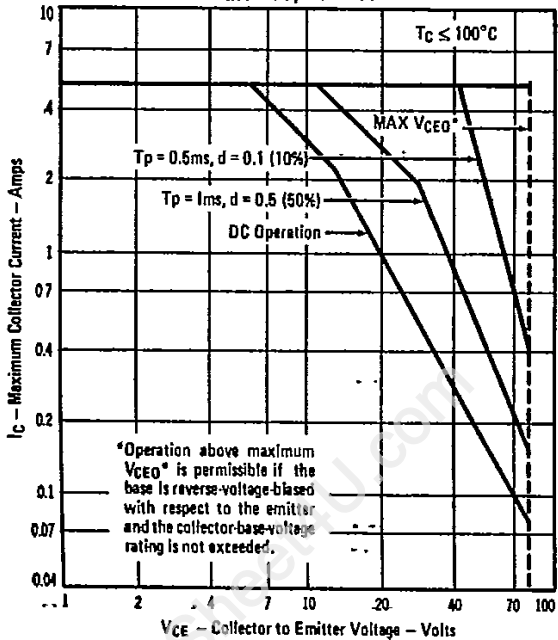
CHARACTERISTIC	SYMBOL	TEST CONDITIONS	2N2877 2N2879		2N2878 2N2880		UNITS
			MIN	MAX	MIN	MAX	
Pulse Rise Time	t_r	See Circuit #1		120		80	nsec
Pulse Storage Time	t_s	See Circuit #1		60		60	nsec
Pulse Fall Time	t_f	See Circuit #1		80		80	nsec
Collector Base Capacitance (f = 1.0 MHz)	C_{OB}	$V_{CB} = 10V, I_E = 0, f = 1 \text{ MHz}$		150		150	pF
High Frequency Current Gain (f = 10 MHz)	$ h_{fe} $	$V_{CE} = 10V, I_C = 1A, f = 10 \text{ MHz}$	3		5		
High Frequency Small Signal (f = 1kHz)	$ h_{fe} $	$V_{CE} = 5V, I_C = 50mA, f = 1 \text{ KHz}$	20	70	40	140	

*JEDEC registered data.

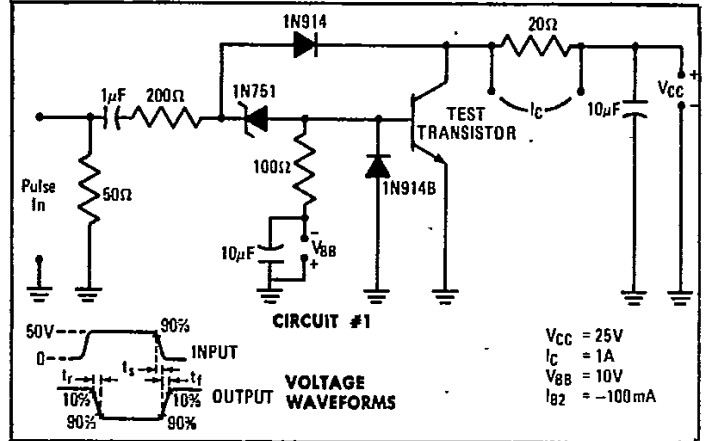
MAXIMUM SAFE OPERATION REGION
2N2877, 2N2878



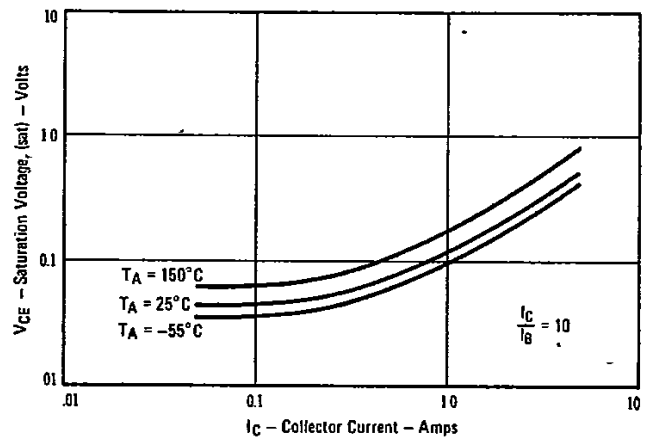
MAXIMUM SAFE OPERATION REGION
2N2879, 2N2880



PULSE RESPONSE MEASUREMENT CIRCUIT



COLLECTOR TO EMITTER VOLTAGE VS. COLLECTOR CURRENT



NORMALIZED CURRENT GAIN VS. COLLECTOR CURRENT

