

NPN SILICON TRIPLE DIFFUSED TRANSISTOR
MP-3

DESCRIPTION

2SC3631-Z is designed for High Voltage Switching, especially in Hybrid Integrated Circuits.

FEATURES

- High Voltage $V_{CE0} = 400\text{ V}$
- High Speed $t_r < 0.7\ \mu\text{s}$
- Complement to 2SA1412-Z

QUALITY GRADE

Standard

Please refer to "Quality grade on NEC Semiconductor Devices" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

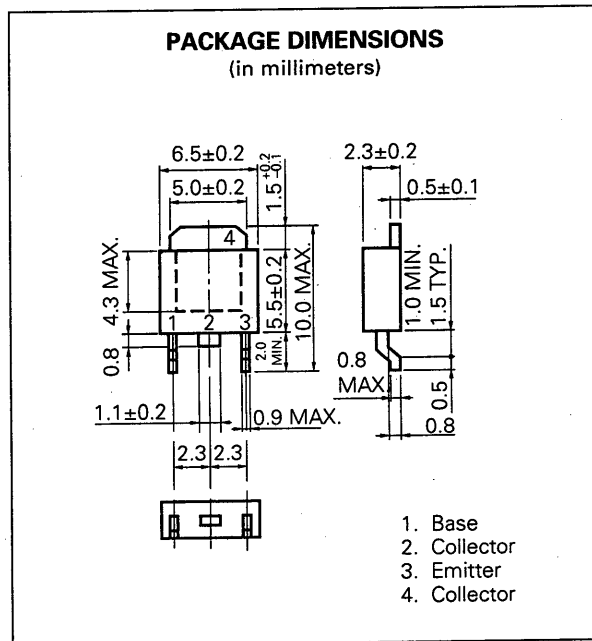
ABSOLUTE MAXIMUM RATINGS ($T_a = 25\text{ }^\circ\text{C}$)

Collector to Base Voltage	V_{CB0}	500	V
Collector to Emitter Voltage	V_{CE0}	400	V
Emitter to Base Voltage	V_{EB0}	7	V
Collector Current (DC)	I_c	2.0	A
Collector Current (Pulse)*	I_c	4.0	A
Total Power Dissipation ($T_a = 25\text{ }^\circ\text{C}$)**	P_T	2.0	W
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

* $PW \leq 10\text{ ms}$, Duty Cycle $\leq 50\%$

** When mounted on ceramic substrate of $7.5\text{ cm}^2 \times 0.7\text{ mm}$

PACKAGE DIMENSIONS
(in millimeters)



ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

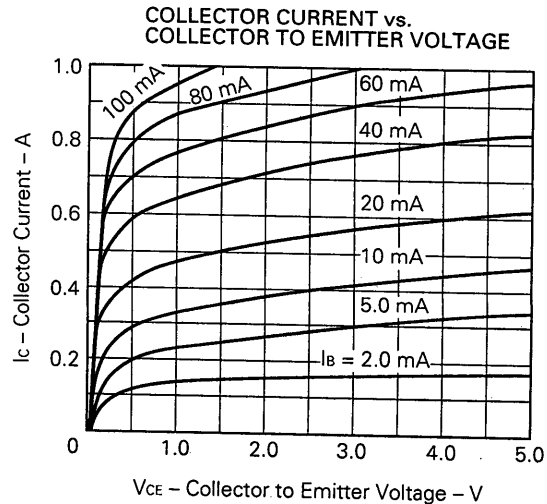
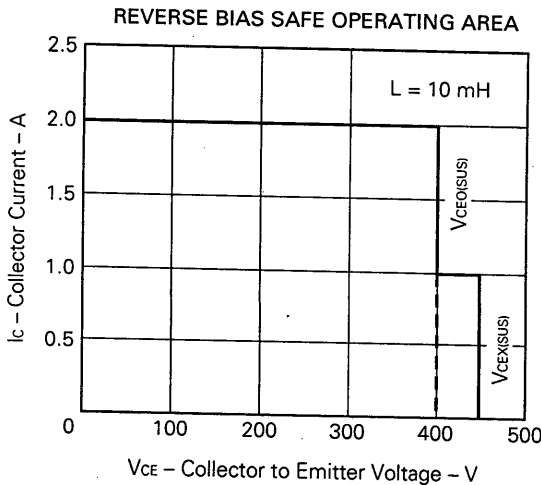
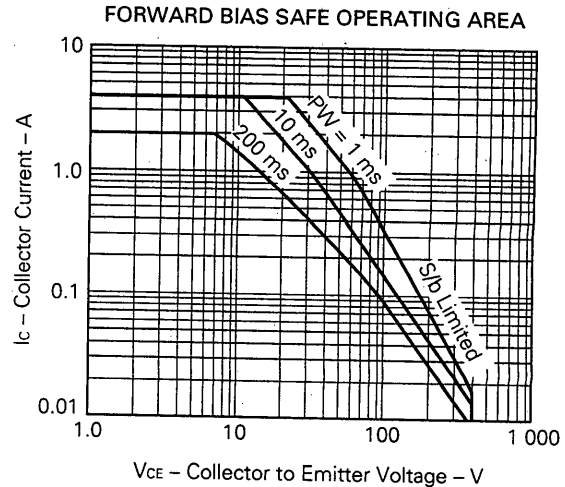
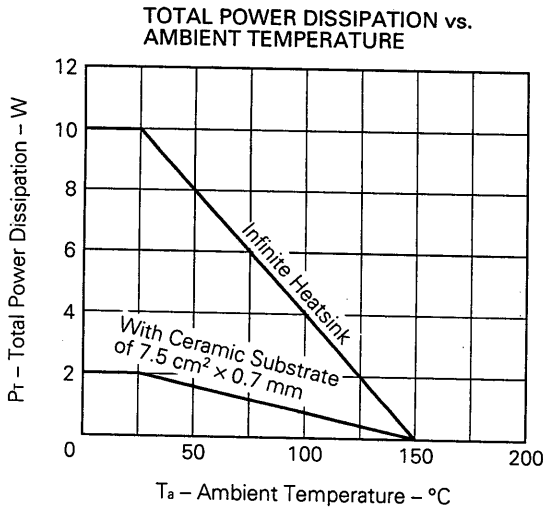
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I _{CBO}			10	μA	V _{CB} = 400 V, I _E = 0
Emitter Cutoff Current	I _{EB0}			10	μA	V _{EB} = 5.0 V, I _C = 0
DC Current Gain	h _{FE1} *	40	60	120		V _{CE} = 5.0 V, I _C = 100 mA
DC Current Gain	h _{FE2} *	6	14			V _{CE} = 5.0 V, I _C = 1.0 A
Collector Saturation Voltage	V _{CE(sat)} *		0.35	1.0	V	I _C = 1.0 A, I _B = 0.2 A
Base Saturation Voltage	V _{BE(sat)} *		1.0	1.5	V	I _C = 1.0 A, I _B = 0.2 A
Gain Bandwidth Product	f _T		50		MHz	V _{CE} = 10 V, I _E = -100 mA
Output Capacitance	C _{ob}		20		pF	V _{CB} = 10 V, I _E = 0, f = 1.0 MHz
Turn-on Time	t _{on}		0.03	0.5	μs	I _C = 1.0 A, R _L = 150 Ω I _{B1} = -I _{B2} = 0.2 A V _{CC} = 150 V
Storage Time	t _{stg}		1.5	2.0	μs	
Fall Time	t _f		0.1	0.7	μs	

* Pulsed: PW ≤ 350 μs, Duty Cycle ≤ 2 %

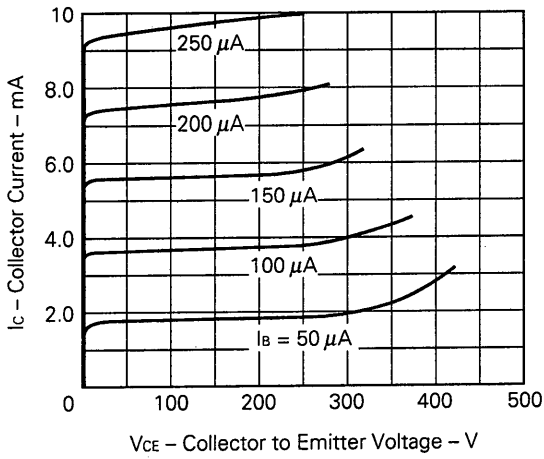
h_{FE} Classification

MARKING	L	K
h _{FE}	40 to 80	60 to 120

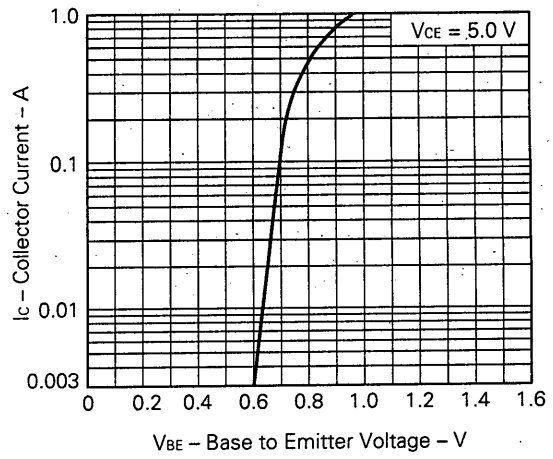
TYPICAL CHARACTERISTICS (T_a = 25 °C)



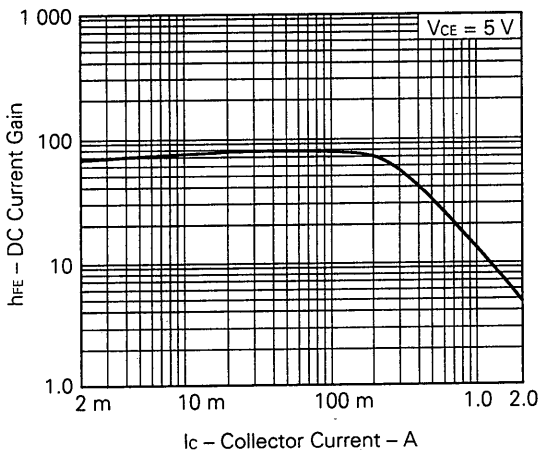
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



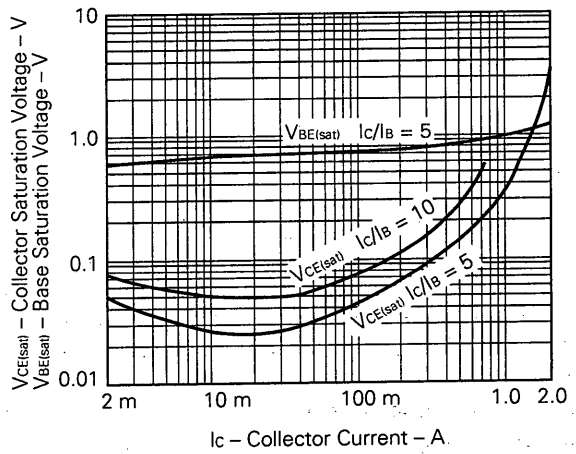
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



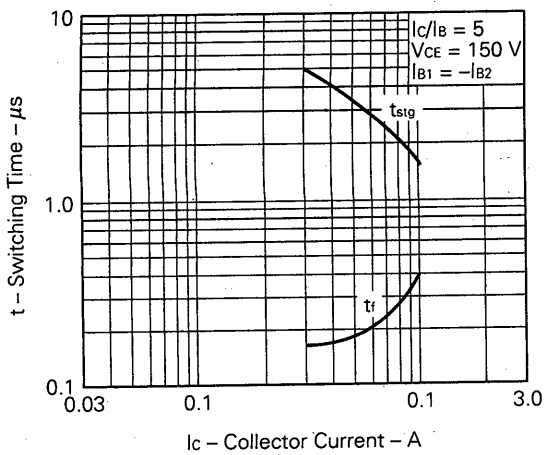
DC CURRENT GAIN vs. COLLECTOR CURRENT



COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



TURN-OFF TIME vs. COLLECTOR CURRENT



Reference

Application note name	No.
Quality control of NEC semiconductors devices.	TEI-1202
Quality control guide of semiconductors devices.	MEI-1202
Assembly manual of semiconductors devices.	IEI-1207
Design of Push-Pull Type Switching Regulators (Basic).	TEB-1002
Design of Push-Pull Type Switching Regulators (Applications).	TEB-1003
Optimum Base Drive Conditions of Switching Power Transistors.	TEB-1014

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Application examples recommended by NEC Corporation.

Standard: Computer, Office equipment, Communication equipment, Test and Measurement equipment, Machine tools, Industrial robots, Audio and Visual equipment, Other consumer products, etc.

Special: Automotive and Transportation equipment, Traffic control systems, Antidisaster systems, Anticrime systems, etc.



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