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www.onsemi.com

Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

March 2008

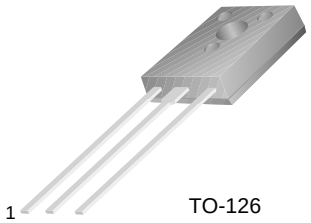
2SC3503/KSC3503
NPN Epitaxial Silicon Transistor

Applications

- Audio, Voltage Amplifier and Current Source
- CRT Display, Video Output
- General Purpose Amplifier

Features

- High Voltage : V_{CEO}= 300V
- Low Reverse Transfer Capacitance : C_{re}= 1.8pF at V_{CB} = 30V
- Excellent Gain Linearity for low THD
- High Frequency: 150MHz
- Full thermal and electrical Spice models are available
- Complement to 2SA1381/KSA1381.



TO-126

1. Emitter 2.Collector 3.Base

Absolute Maximum Ratings* T_a = 25°C unless otherwise noted

Symbol	Parameter	Ratings	Units
BV_{CBO}	Collector-Base Voltage	300	V
BV_{CEO}	Collector-Emitter Voltage	300	V
BV_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current(DC)	100	mA
I_{CP}	Collector Current(Pulse)	200	mA
P_C	Total Device Dissipation, T_C=25°C T_C=125°C	7 1.2	W W
T_J, T_{STG}	Junction and Storage Temperature	- 55 ~ +150	°C

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

Thermal Characteristics* T_a=25°C unless otherwise noted

Symbol	Parameter	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	17.8	°C/W

* Device mounted on minimum pad size

h_{FE} Classification

Classification	C	D	E	F
h_{FE}	40 ~ 80	60 ~ 120	100 ~ 200	160 ~ 320

Electrical Characteristics* T_a=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
BV_{CBO}	Collector-Base Breakdown Voltage	I_C = 10μA, I_E = 0	300			V
BV_{CEO}	Collecto- Emitter Breakdown Voltage	I_C = 1mA, I_B = 0	300			V
BV_{EBO}	Emitter-Base Breakdown Voltage	I_E = 10μA, I_C = 0	5			V
I_{CBO}	Collector Cut-off Current	V_{CB} = 200V, I_E = 0			0.1	μA
I_{EBO}	Emitter Cut-off Current	V_{EB} = 4V, I_C = 0			0.1	μA
h_{FE}	DC Current Gain	V_{CE} = 10V, I_C = 10mA	40		320	
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C = 20mA, I_B = 2mA			0.6	V
V_{BE}(sat)	Base-Emitter Saturation Voltage	I_C = 20mA, I_B = 2mA			1	V
f_T	Current Gain Bandwidth Product	V_{CE} = 30V, I_C = 10mA		150		MHz
C_{ob}	Output Capacitance	V_{CB} = 30V, f = 1MHz		2.6		pF
C_{re}	Reverse Transfer Capacitance	V_{CB} = 30V, f = 1MHz		1.8		pF

* Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Ordering Information

Part Number*	Marking	Package	Packing Method	Remarks
2SC3503CSTU	2SC3503C	TO-126	TUBE	hFE1 C grade
2SC3503DSTU	2SC3503D	TO-126	TUBE	hFE1 D grade
2SC3503ESTU	2SC3503E	TO-126	TUBE	hFE1 E grade
2SC3503FSTU	2SC3503F	TO-126	TUBE	hFE1 F grade
KSC3503CSTU	C3503C	TO-126	TUBE	hFE1 C grade
KSC3503DSTU	C3503D	TO-126	TUBE	hFE1 D grade
KSC3503ESTU	C3503E	TO-126	TUBE	hFE1 E grade
KSC3503FSTU	C3503F	TO-126	TUBE	hFE1 F grade

* 1. Affix "-S-" means the standard TO126 Package.(see package dimensions). If the affix is "-STS-" instead of "-S-", that mean the short-lead TO126 package.
2. Suffix "-TU" means the tube packing, The Suffix "TU" could be replaced to other suffix character as packing method.

Typical Characteristics

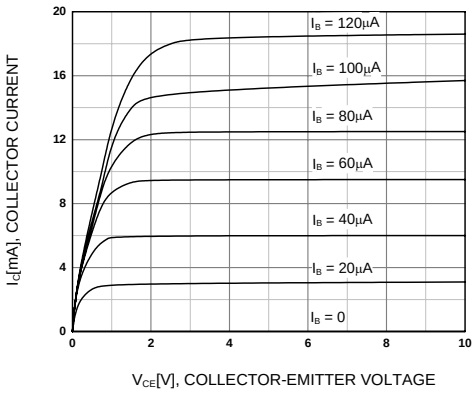


Figure 1. Static Characteristic

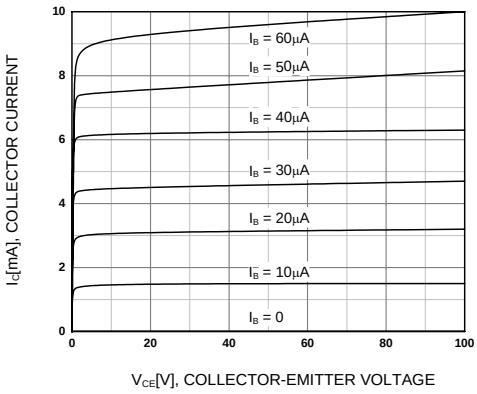


Figure 2. Static Characteristic

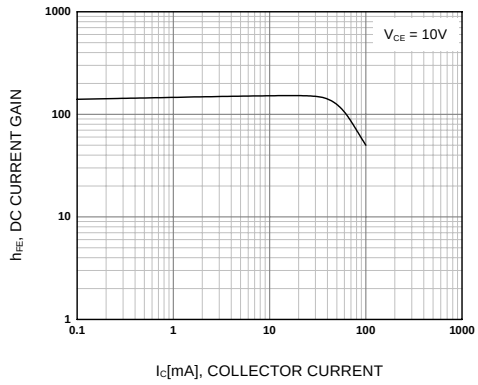


Figure 3. DC current Gain

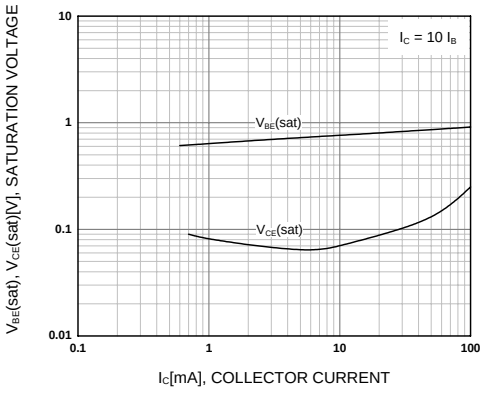


Figure 4. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

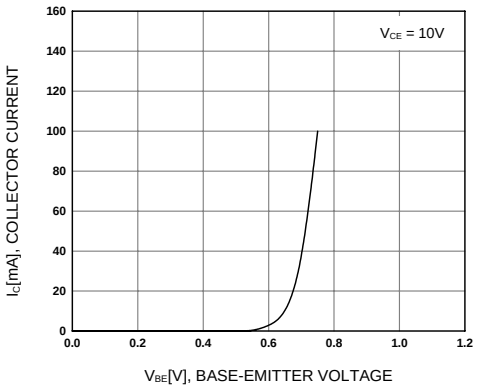


Figure 5. Base-Emitter On Voltage

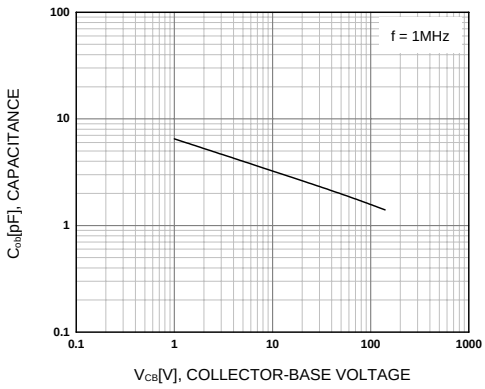


Figure 6. Collector Output Capacitance

Typical Characteristics (Continued)

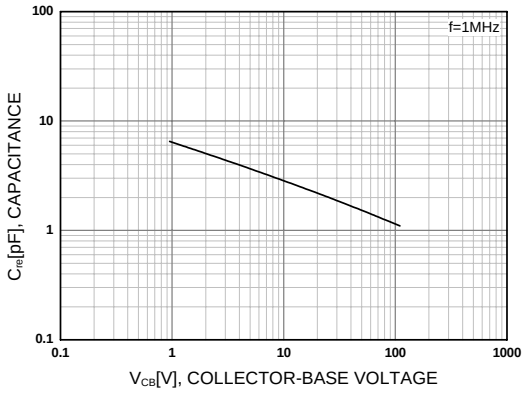


Figure 7. Reverse Transfer Capacitance

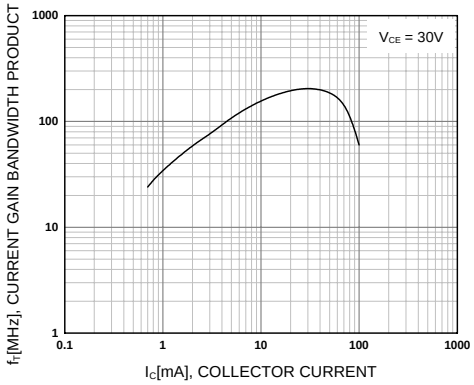


Figure 8. Current Gain Gandwidth Product

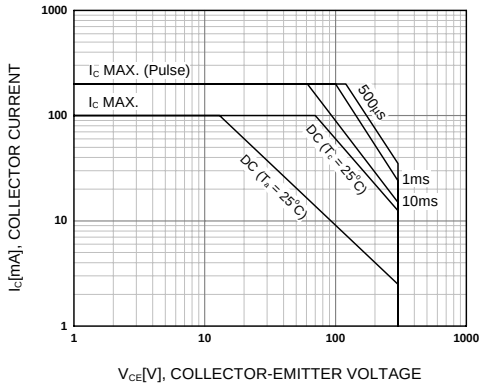


Figure 9. Safe Operating Area

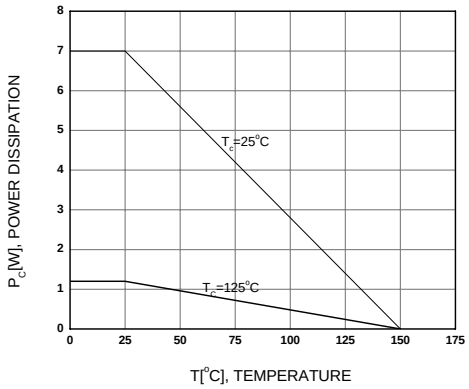
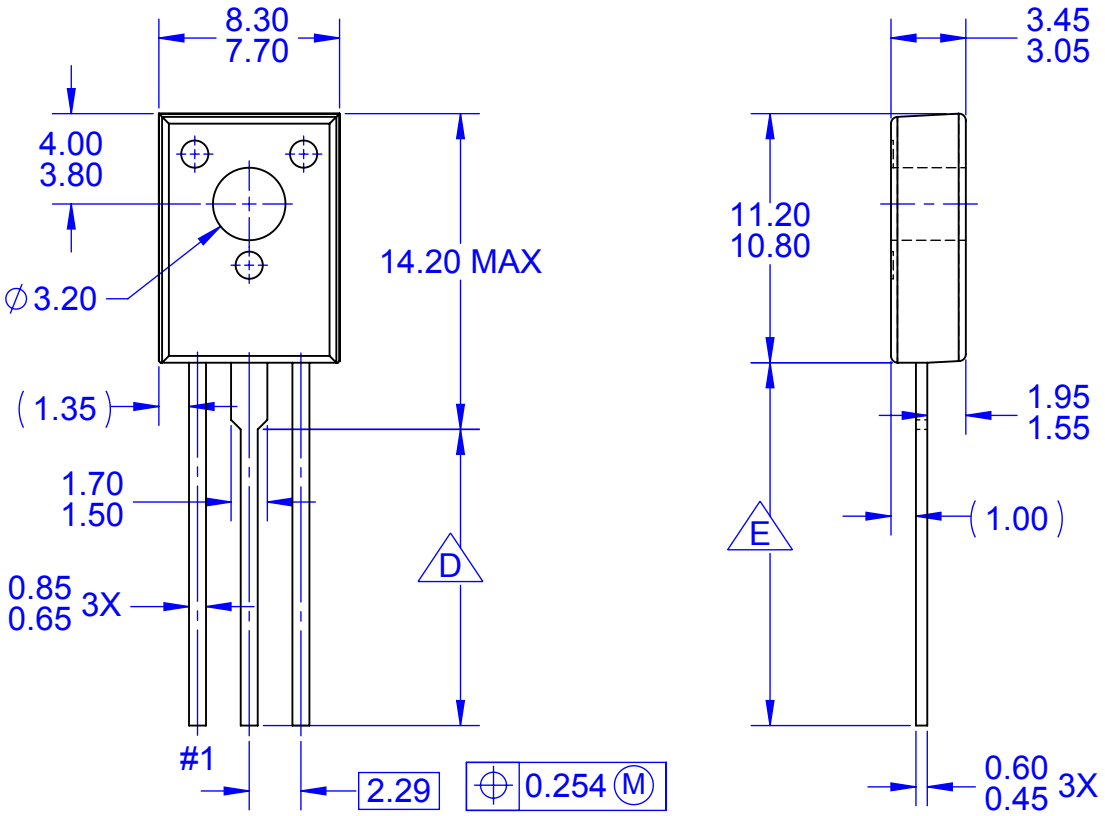
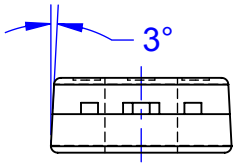


Figure 10. Power Derating



TOP VIEW

SIDE VIEW



FRONT VIEW

PRODUCTION CODE	TERMINAL LENGTH "D"	TERMINAL LENGTH "E"
TSSTU	3.45 - 4.05	6.45-7.45
TSTU	2.36 - 2.96	5.36-6.36
NONE (STD LENGTH)	12.76 - 13.36	15.76-16.76

NOTES:

A. NO INDUSTRY STANDARD APPLIES TO THIS PACKAGE
B. ALL DIMENSIONS ARE IN MILLIMETERS
C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR PROTRUSIONS

△D FOR TERMINAL LENGTH "D", REFER TO TABLE

△E FOR TERMINAL LENGTH "E", REFER TO TABLE

F. DRAWING FILENAME: MKT-TO126AArev2

FAIRCHILD ™

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
Fax: 303−675−2176 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada
Europe, Middle East and Africa Technical Support:
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ON Semiconductor Website: **www.onsemi.com**

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