

TIP3055 (NPN), TIP2955 (PNP)

Complementary Silicon Power Transistors

Designed for general-purpose switching and amplifier applications.

Features

- DC Current Gain –
 $h_{FE} = 20-70 @ I_C$
 $= 4.0 A_{dc}$
- Collector–Emitter Saturation Voltage –
 $V_{CE(sat)} = 1.1 V_{dc} (Max) @ I_C$
 $= 4.0 A_{dc}$
- Excellent Safe Operating Area
- Pb–Free Packages are Available*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector – Emitter Voltage	V_{CEO}	60	Vdc
Collector – Emitter Voltage	V_{CER}	70	Vdc
Collector – Base Voltage	V_{CB}	100	Vdc
Emitter – Base Voltage	V_{EB}	7.0	Vdc
Collector Current – Continuous	I_C	15	A _{dc}
Base Current	I_B	7.0	A _{dc}
Total Power Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	P_D	90 0.72	W W/ $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–65 to +150	$^\circ C$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction–to–Case	$R_{\theta JC}$	1.39	$^\circ C/W$
Thermal Resistance, Junction–to–Ambient	$R_{\theta JA}$	35.7	$^\circ C/W$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

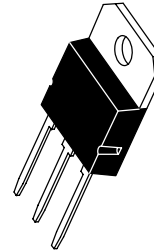
*For additional information on our Pb–Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



ON Semiconductor®

<http://onsemi.com>

**15 AMPERE
POWER TRANSISTORS
COMPLEMENTARY SILICON
60 VOLTS, 90 WATTS**



SOT-93 (TO-218)
CASE 340D
STYLE 1

MARKING DIAGRAM



A = Assembly Location
Y = Year
WW = Work Week
TIPxx55 = Device Code
xx = 30 or 29
G = Pb–Free Package

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

TIP3055 (NPN), TIP2955 (PNP)

ORDERING INFORMATION

Device	Package	Shipping
TIP3055	SOT-93 (TO-218)	30 Units / Rail
TIP3055G	SOT-93 (TO-218) (Pb-Free)	30 Units / Rail
TIP2955	SOT-93 (TO-218)	30 Units / Rail
TIP2955G	SOT-93 (TO-218) (Pb-Free)	30 Units / Rail

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

Characteristic	Symbol	Min	Max	Unit
----------------	--------	-----	-----	------

OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage (Note 1) (I _C = 30 mAdc, I _B = 0)	V _{CEO(sus)}	60	–	Vdc
Collector Cutoff Current (V _{CE} = 70 Vdc, R _{BE} = 100 Ohms)	I _{CER}	–	1.0	mAdc
Collector Cutoff Current (V _{CE} = 30 Vdc, I _B = 0)	I _{CEO}	–	0.7	mAdc
Collector Cutoff Current (V _{CE} = 100 Vdc, V _{BE(off)} = 1.5 Vdc)	I _{CEV}	–	5.0	mAdc
Emitter Cutoff Current (V _{BE} = 7.0 Vdc, I _C = 0)	I _{EBO}	–	5.0	mAdc

ON CHARACTERISTICS (Note 1)

DC Current Gain (I _C = 4.0 Adc, V _{CE} = 4.0 Vdc) (I _C = 10 Adc, V _{CE} = 4.0 Vdc)	h _{FE}	20 5.0	70 –	–
Collector-Emitter Saturation Voltage (I _C = 4.0 Adc, I _B = 400 mAdc) (I _C = 10 Adc, I _B = 3.3 Adc)	V _{CE(sat)}	– –	1.1 3.0	Vdc
Base-Emitter On Voltage (I _C = 4.0 Adc, V _{CE} = 4.0 Vdc)	V _{BE(on)}	–	1.8	Vdc

SECOND BREAKDOWN

Second Breakdown Collector Current with Base Forward Biased (V _{CE} = 30 Vdc, t = 1.0 s; Nonrepetitive)	I _{S/b}	3.0	–	Adc
---	------------------	-----	---	-----

DYNAMIC CHARACTERISTICS

Current Gain — Bandwidth Product (I _C = 0.5 Adc, V _{CE} = 10 Vdc, f = 1.0 MHz)	f _T	2.5	–	MHz
Small-Signal Current Gain (V _{CE} = 4.0 Vdc, I _C = 1.0 Adc, f = 1.0 kHz)	h _{fe}	15	–	kHz

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

NOTE: For additional design curves, refer to electrical characteristics curves of 2N3055.

TIP3055 (NPN), TIP2955 (PNP)

[查询"TIP3055-D"供应商](#)

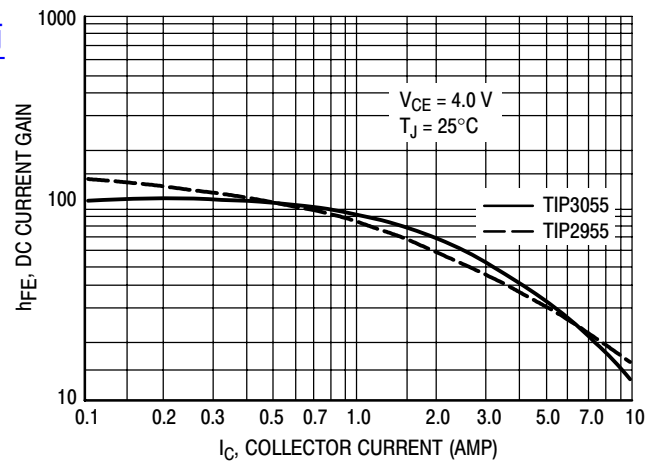


Figure 1. DC Current Gain

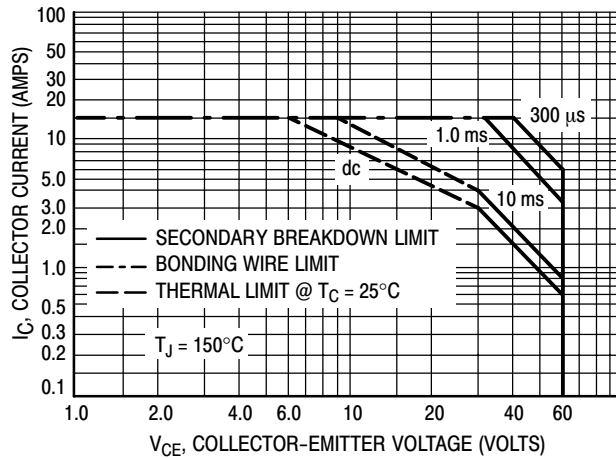


Figure 2. Maximum Rated Forward Bias Safe Operating Area

There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown. Safe operating area curves indicate $I_C - V_{CE}$ limits of the transistor that must be observed for reliable operation; i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

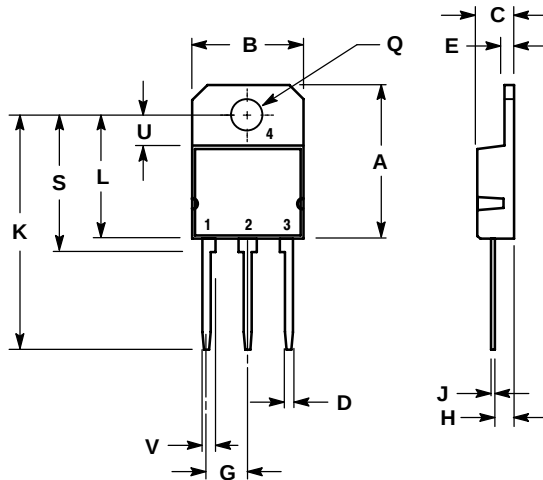
The data of Figure 2 is based on $T_C = 25^\circ\text{C}$; $T_{J(pk)}$ is variable depending on power level. Second breakdown pulse limits are valid for duty cycles to 10% but must be derated for temperature.

TIP3055 (NPN), TIP2955 (PNP)

[查询"TIP3055-D"供应商](#)

PACKAGE DIMENSIONS

SOT-93 (TO-218)
CASE 340D-02
ISSUE E



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	---	20.35	---	0.801
B	14.70	15.20	0.579	0.598
C	4.70	4.90	0.185	0.193
D	1.10	1.30	0.043	0.051
E	1.17	1.37	0.046	0.054
G	5.40	5.55	0.213	0.219
H	2.00	3.00	0.079	0.118
J	0.50	0.78	0.020	0.031
K	31.00 REF		1.220 REF	
L	---	16.20	---	0.638
Q	4.00	4.10	0.158	0.161
S	17.80	18.20	0.701	0.717
U	4.00 REF		0.157 REF	
V	1.75 REF		0.069	

STYLE 1:

- PIN 1: BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

ON Semiconductor and  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor
P.O. Box 61312, Phoenix, Arizona 85082-1312 USA
Phone: 480-829-7710 or 800-344-3860 Toll Free USA/Canada
Fax: 480-829-7709 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada

Japan: ON Semiconductor, Japan Customer Focus Center
2-9-1 Kamimeguro, Meguro-ku, Tokyo, Japan 153-0051
Phone: 81-3-5773-3850

ON Semiconductor Website: <http://onsemi.com>

Order Literature: <http://www.onsemi.com/litorder>

For additional information, please contact your
local Sales Representative.

TIP3055/D