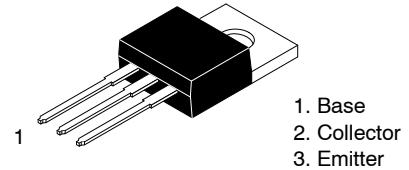


# NPN Silicon Transistor

## KSC5027

### High Voltage and High Reliability

- High Speed Switching
- Wide SOA



TO-220-3LD  
CASE 340AT

### ABSOLUTE MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$ unless otherwise noted.)

Symbol	Parameter	Ratings	Unit
$V_{CBO}$	Collector-Base Voltage	1100	V
$V_{CEO}$	Collector-Emitter Voltage	800	V
$V_{EBO}$	Emitter-Base Voltage	7	V
$I_C$	Collector Current (DC)	3	A
$I_{CP}$	Collector Current (Pulse)	10	A
$I_B$	Base Current	1.5	A
$P_C$	Collector Dissipation ( $T_C = 25^\circ\text{C}$ )	50	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-55 ~ 150	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### MARKING DIAGRAM

YWWZZ C5027-O
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&3 = Date Code (Year & Week)  
&K = Lot Run Traceability Code  
C5027 = Specific Device Code  
O =  $h_{FE}$  Grade

### ORDERING INFORMATION

Device	Package	Shipping
KSC5027OTU	TO-220-3LD (Pb-Free, Halide Free)	1000 Units / Tube

### ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ unless otherwise noted.)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C = 1\text{ mA}$ , $I_E = 0$	1100	—	—	V
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 5\text{ mA}$ , $I_B = 0$	800	—	—	V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = 1\text{ mA}$ , $I_C = 0$	7	—	—	V
$V_{CEX(sus)1}$	Collector-Emitter Sustaining Voltage	$I_C = 1.5\text{ A}$ , $I_{B1} = -I_{B2} = 0.3\text{ A}$ , $L = 2\text{ mH}$ , Clamped	800	—	—	V
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = 800\text{ V}$ , $I_E = 0$	—	—	10	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = 5\text{ V}$ , $I_C = 0$	—	—	10	$\mu\text{A}$
$h_{FE1}$ $h_{FE2}$	DC Current Gain	$V_{CE} = 5\text{ V}$ , $I_C = 0.2\text{ A}$ $V_{CE} = 5\text{ V}$ , $I_C = 1\text{ A}$	10 8	—	40	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 1.5\text{ A}$ , $I_B = 0.3\text{ A}$	—	—	2	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 1.5\text{ A}$ , $I_B = 0.3\text{ A}$	—	—	1.5	V
$C_{ob}$	Output Capacitance	$V_{CB} = 10\text{ V}$ , $I_E = 0$ , $f = 1\text{ MHz}$	—	60	—	$\mu\text{s}$
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 10\text{ V}$ , $I_C = 0.2\text{ A}$	—	15	—	MHz
$t_{ON}$	Turn On Time	$V_{CC} = 400\text{ V}$ , $I_C = 5\text{ A}$ , $I_{B1} = -2.5$ , $I_{B2} = 2\text{ A}$ , $R_L = 200\ \Omega$	—	—	0.5	$\mu\text{s}$
$t_{STG}$	Storage Time		—	—	3	$\mu\text{s}$
$t_F$	Fall Time		—	—	0.3	$\mu\text{s}$

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

### $h_{FE}$ Classification

Classification	N	R	O
$H_{FE1}$	10 ~ 20	15 ~ 30	20 ~ 40

## TYPICAL CHARACTERISTICS

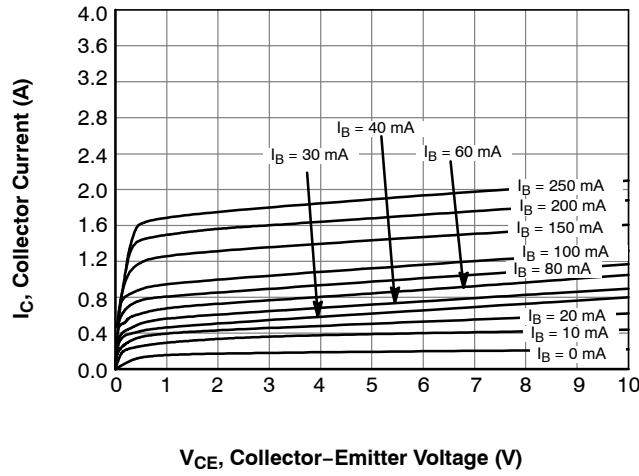


Figure 1. Static Characteristic

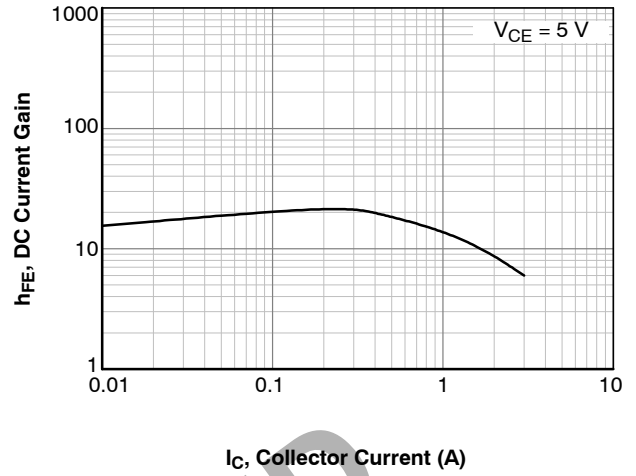


Figure 2. DC Current Gain

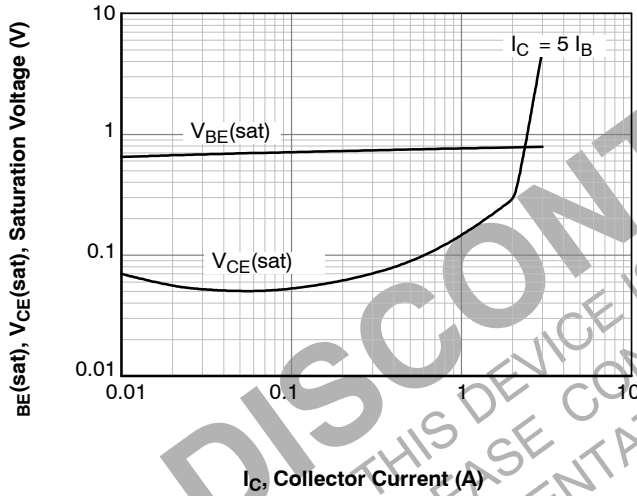
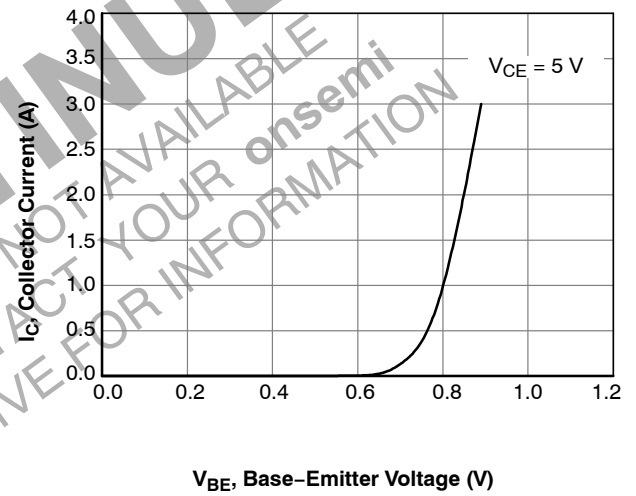
Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

Figure 4. Base-Emitter On Voltage

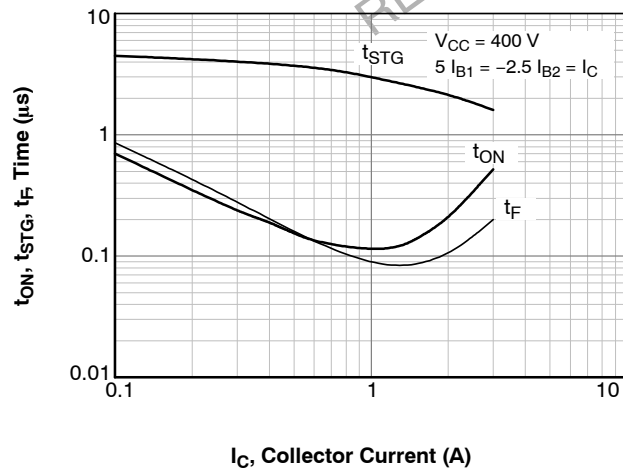


Figure 5. Switching Time

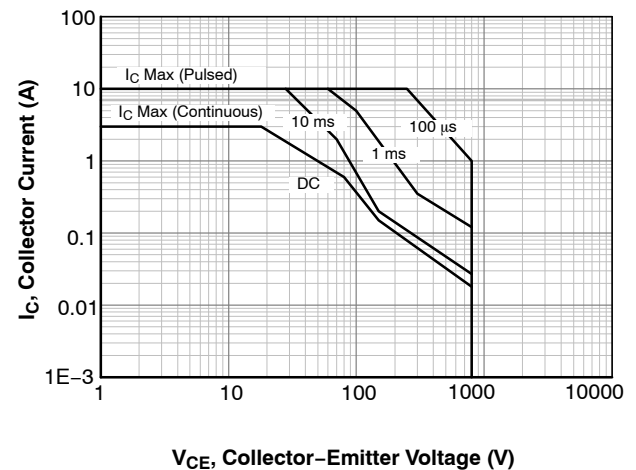


Figure 6. Safe Operating Area

TYPICAL CHARACTERISTICS (continued)

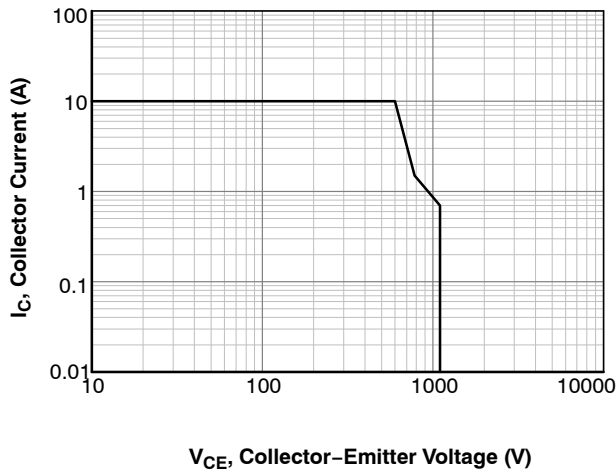


Figure 7. Reverse Bias Operating Areas

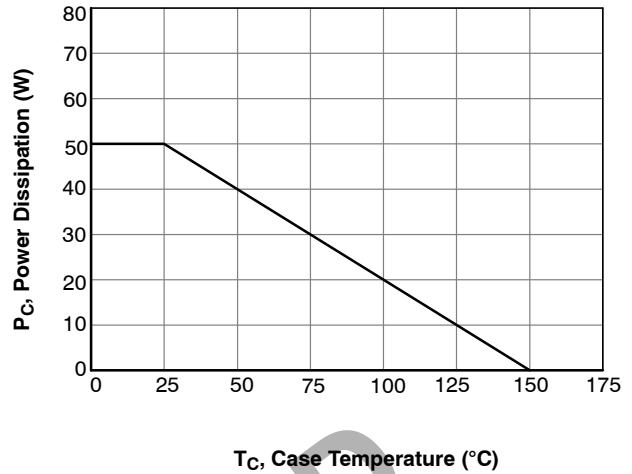


Figure 8. Power Derating

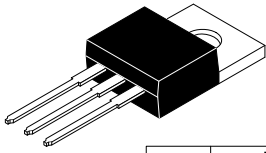
**DISCONTINUED**  
 THIS DEVICE IS NOT AVAILABLE  
 PLEASE CONTACT YOUR onsemi  
 REPRESENTATIVE FOR INFORMATION

REVISION HISTORY

Revision	Description of Changes	Date
3	Document Discontinued.	11/11/2025

This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.

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THIS DEVICE IS NOT AVAILABLE  
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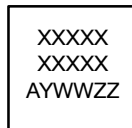
TO-220-3LD  
CASE 340AT  
ISSUE B

DATE 08 AUG 2022

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	4.00	--	4.70
A1	SEE NOTE "F"		
A2	2.10	--	2.85
b	0.55	--	1.00
b2	1.10	--	1.62
b4	1.42	--	1.62
c	0.36	--	0.60
D	13.90	--	16.30
D1	8.13	--	9.40
D2	11.50	--	14.30
D3	15.42	--	16.51
E	9.65	--	10.67
E1	7.59	--	8.65
e	2.40	--	2.67
H1	6.06	--	6.69
L	12.70	--	14.04
L1	2.70	--	4.10
P	3.50	--	4.00
Q	2.50	--	3.40
z	2.13 REF		
z1	2.06 REF		
θ	3°	--	5°

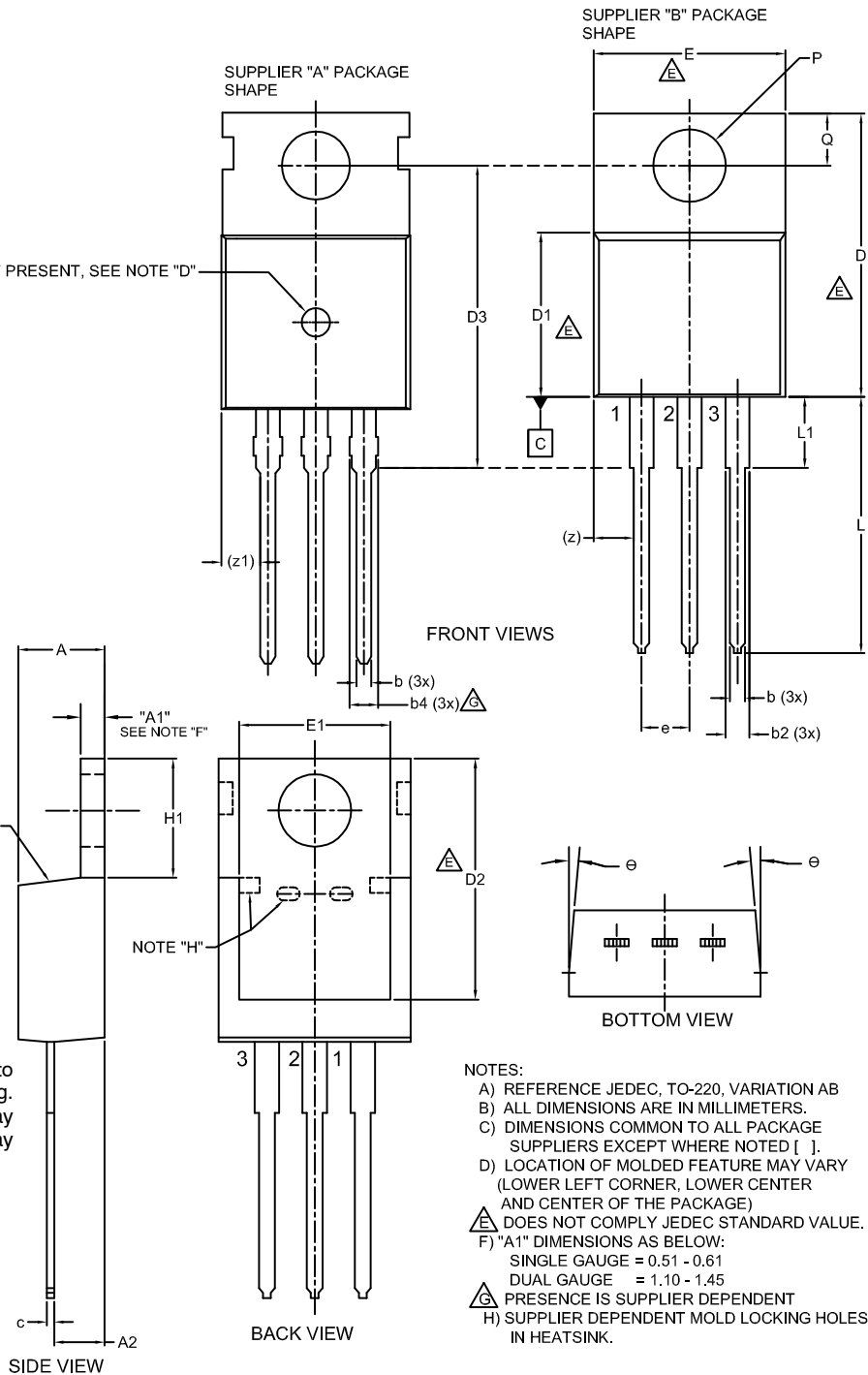
IF PRESENT, SEE NOTE "D"

GENERIC  
MARKING DIAGRAM\*



XXXX = Specific Device Code  
A = Assembly Location  
Y = Year  
WW = Work Week  
ZZ = Assembly Lot Code

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.



NOTES:

- A) REFERENCE JEDEC, TO-220, VARIATION AB
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS COMMON TO ALL PACKAGE SUPPLIERS EXCEPT WHERE NOTED [ ].
- D) LOCATION OF MOLDED FEATURE MAY VARY (LOWER LEFT CORNER, LOWER CENTER AND CENTER OF THE PACKAGE)
- E) DOES NOT COMPLY JEDEC STANDARD VALUE.
- F) "A1" DIMENSIONS AS BELOW:  
SINGLE GAUGE = 0.51 - 0.61  
DUAL GAUGE = 1.10 - 1.45
- G) PRESENCE IS SUPPLIER DEPENDENT
- H) SUPPLIER DEPENDENT MOLD LOCKING HOLES IN HEATSINK.

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DESCRIPTION:	TO-220-3LD	PAGE 1 OF 1

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