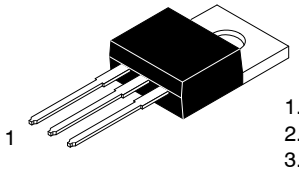
NPN Silicon Transistor

KSC5027

High Voltage and High Reliability

- High Speed Switching
- Wide SOA



1. Base
2. Collector
3. Emitter

TO−220−3LD
CASE 340AT

MARKING DIAGRAM

&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

ABSOLUTE MAXIMUM RATINGS (T_C = 25°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°C)	50	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	−55 ~ 150	°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.

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

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

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

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TYPICAL CHARACTERISTICS

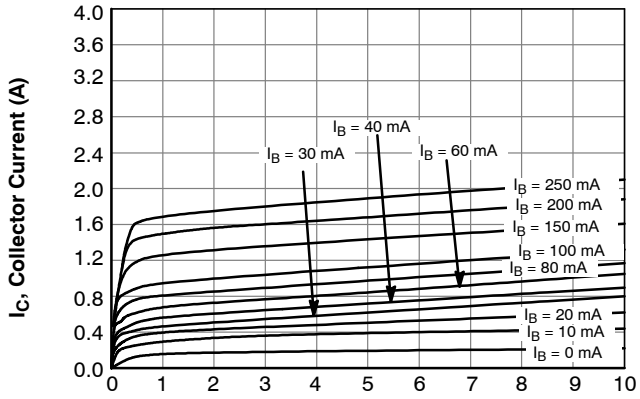


Figure 1. Static Characteristic

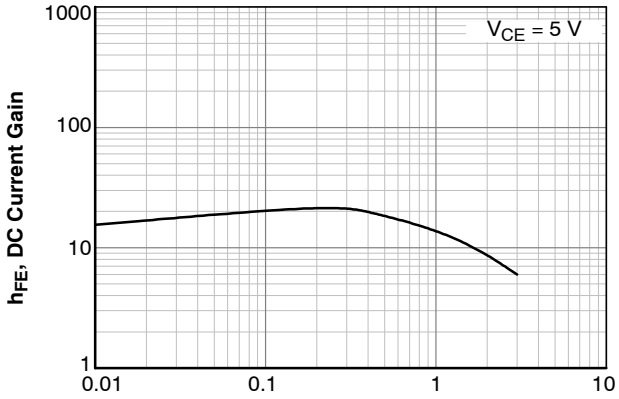


Figure 2. DC Current Gain

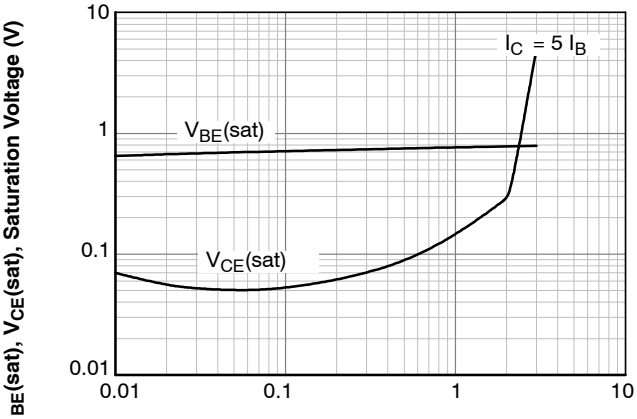


Figure 3. Base−Emitter Saturation Voltage Collector−Emitter Saturation Voltage

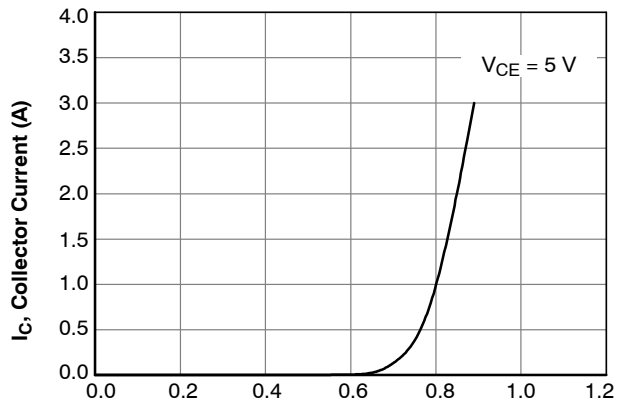


Figure 4. Base−Emitter On Voltage

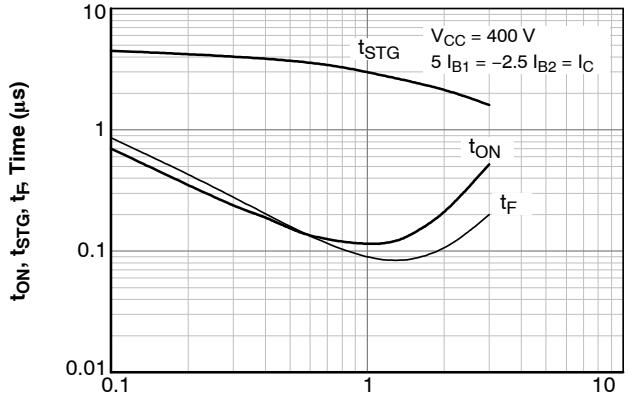


Figure 5. Switching Time

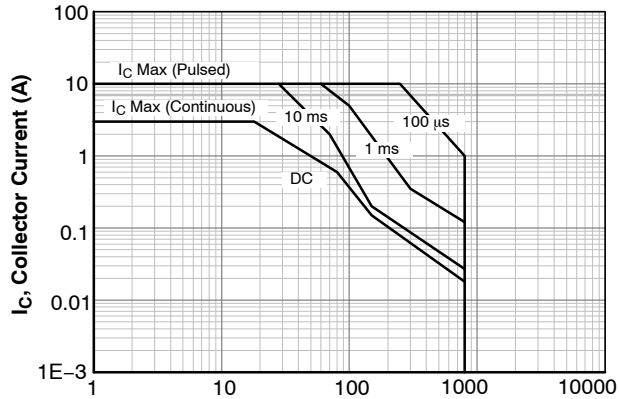


Figure 6. Safe Operating Area

TYPICAL CHARACTERISTICS (Continued)

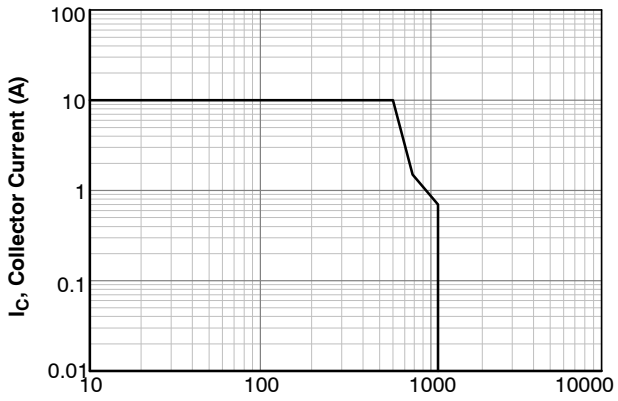


Figure 7. Reverse Bias Operating Areas

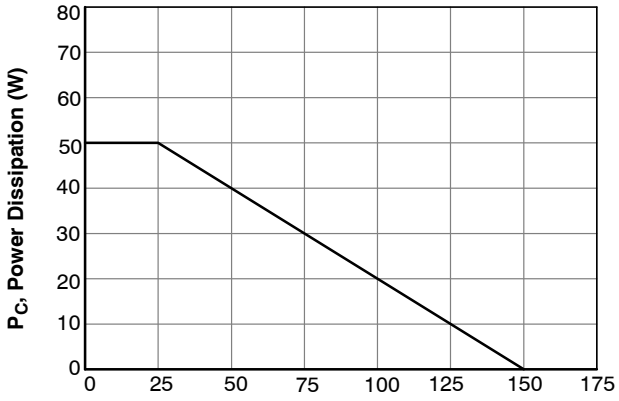
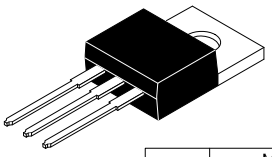


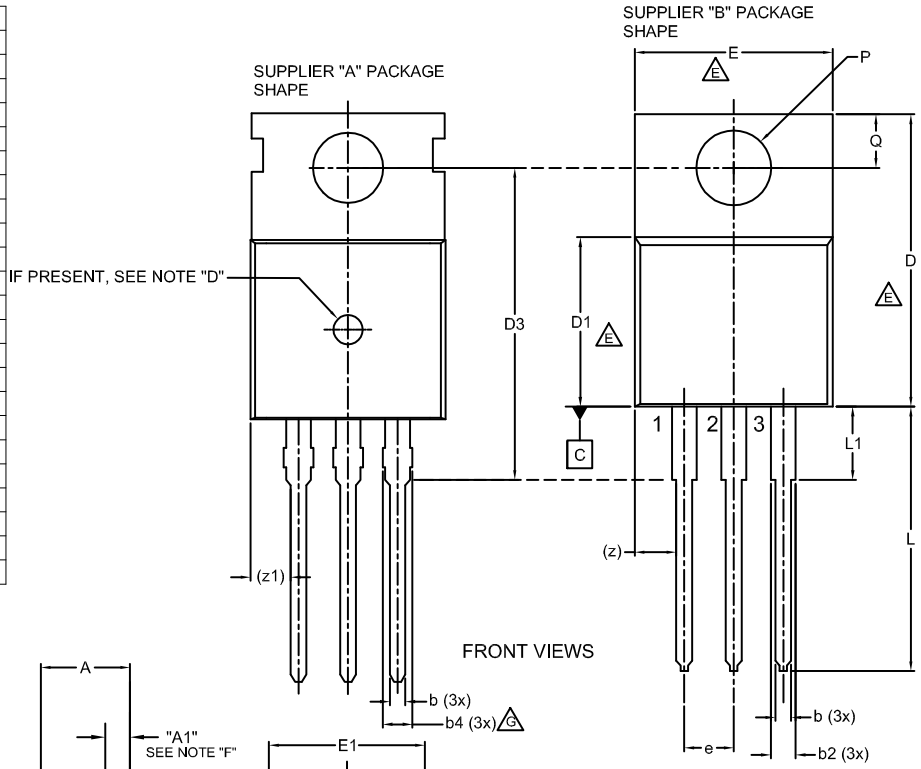
Figure 8. Power Derating

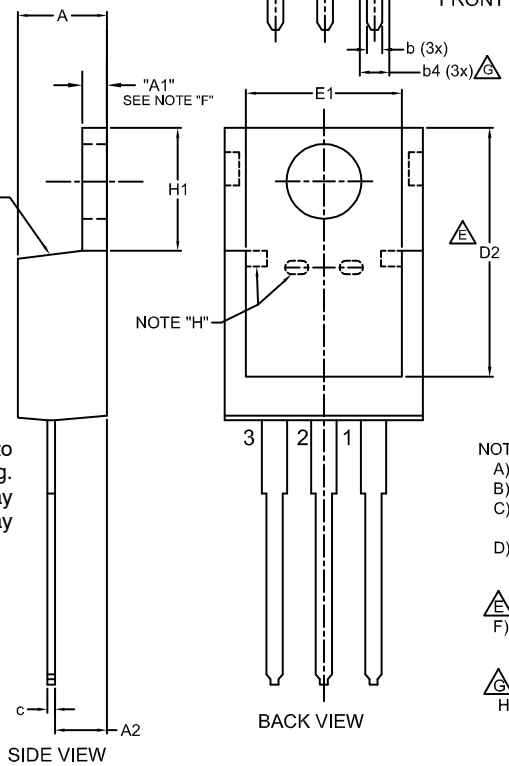


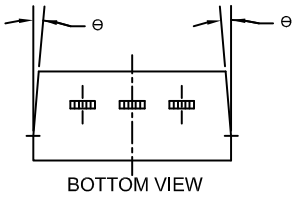
TO−220−3LD
CASE 340AT
ISSUE B

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°







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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