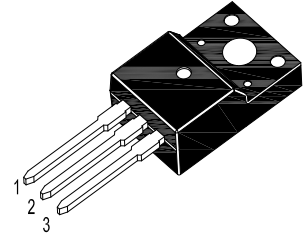


# 2SD2060F-HAF

## NPN Silicon Epitaxial Planar Power Transistor

### Features

- Good Linearity of  $h_{FE}$
- Halogen and Antimony Free(HAF), RoHS compliant



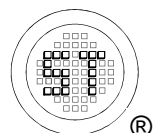
TO-220F Plastic Package  
1.Base 2.Collector 3.Emitter

### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Value	Unit
Collector Base Voltage	$V_{CBO}$	80	V
Collector Emitter Voltage	$V_{CEO}$	80	V
Emitter Base Voltage	$V_{EBO}$	5	V
Collector Current	$I_C$	4	A
Base Current	$I_B$	0.4	A
Power Dissipation ( $T_c = 25^\circ\text{C}$ )	$P_D$	25	W
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	- 55 to + 150	$^\circ\text{C}$

### Thermal Characteristics

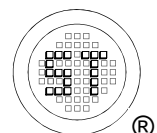
Parameter	Symbol	Max.	Unit
Thermal Resistance - Junction to Case	$R_{\theta JC}$	5	$^\circ\text{C/W}$



# 2SD2060F-HAF

## Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Min.	Typ.	Max.	Unit	
DC Current Gain at $V_{CE} = 5\text{ V}$ , $I_C = 0.5\text{ A}$	R O Y	$h_{FE}$	40	-	80	-
		$h_{FE}$	70	-	140	-
		$h_{FE}$	120	-	240	-
		$h_{FE}$	15	-	-	-
at $V_{CE} = 5\text{ V}$ , $I_C = 3\text{ A}$						
Collector Base Cutoff Current at $V_{CB} = 80\text{ V}$	$I_{CBO}$	-	-	30	$\mu\text{A}$	
Emitter Base Cutoff Current at $V_{EB} = 5\text{ V}$	$I_{EBO}$	-	-	100	$\mu\text{A}$	
Collector Base Breakdown Voltage at $I_C = 100\text{ }\mu\text{A}$	$V_{(BR)CBO}$	80	-	-	V	
Collector Emitter Breakdown Voltage at $I_C = 1\text{ mA}$	$V_{(BR)CEO}$	80	-	-	V	
Emitter Base Breakdown Voltage at $I_E = 100\text{ }\mu\text{A}$	$V_{(BR)EBO}$	5	-	-	V	
Collector Emitter Saturation Voltage at $I_C = 3\text{ A}$ , $I_B = 0.3\text{ A}$	$V_{CE(sat)}$	-	-	1.5	V	
Base Emitter Voltage at $V_{CE} = 5\text{ V}$ , $I_C = 3\text{ A}$	$V_{BE}$	-	-	1.5	V	
Transition Frequency at $V_{CE} = 5\text{ V}$ , $I_C = 0.5\text{ A}$	$f_T$	-	8	-	MHz	
Collector Output Capacitance at $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$	$C_{ob}$	-	30	-	pF	



## Electrical Characteristics Curves

Fig. 1 Output Characteristics Curve

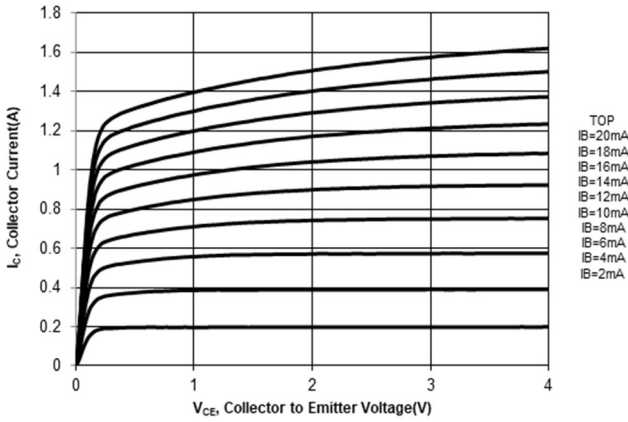


Fig. 2 Collector Current vs. Base to Emitter Voltage

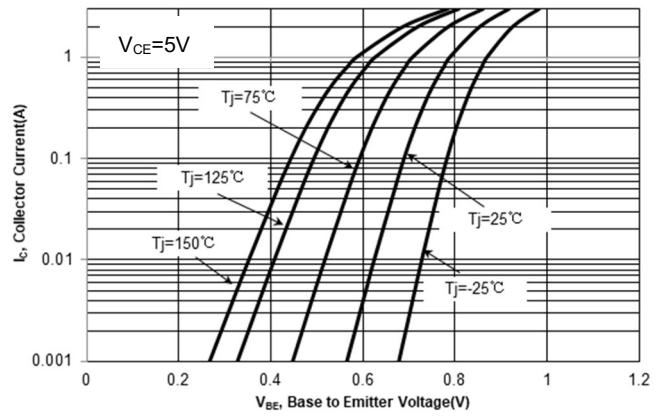


Fig. 3 DC Current Gain vs. Collector Current

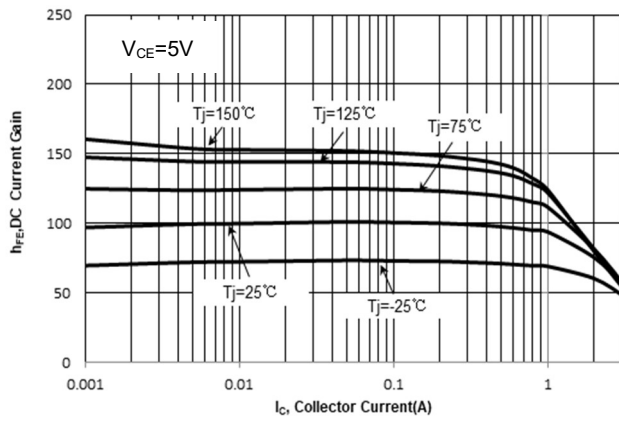
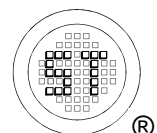
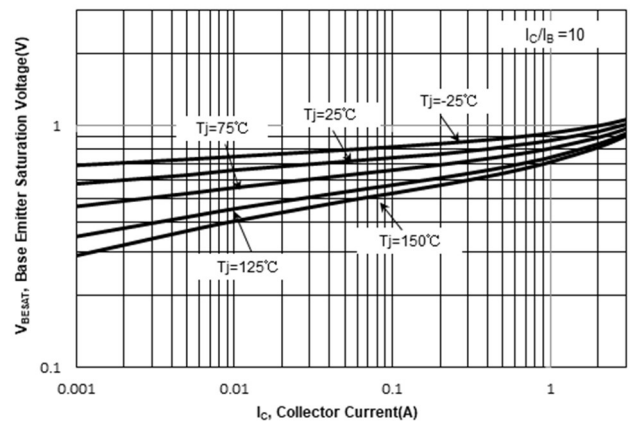


Fig. 4  $V_{BESAT}$  vs. Collector Current



# 2SD2060F-HAF

## Electrical Characteristics Curves

Fig. 5  $V_{CESAT}$  vs. Collector Current

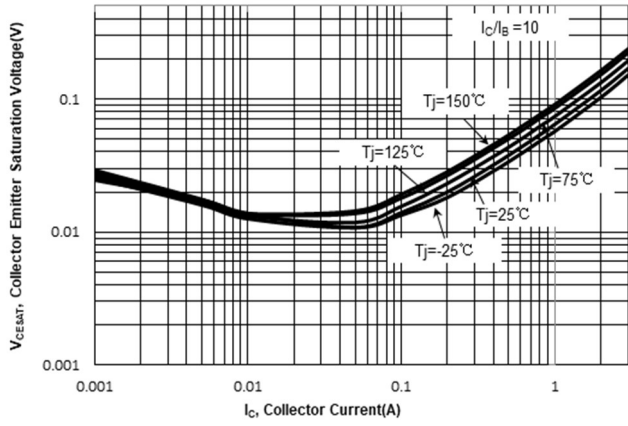


Fig. 6 Output Capacitance

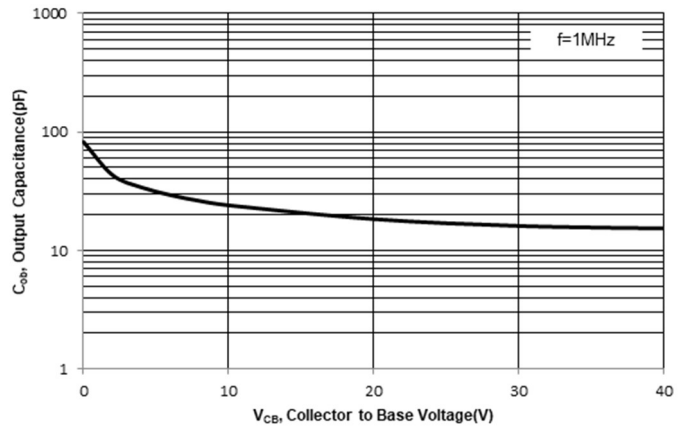
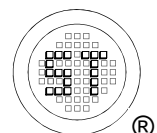
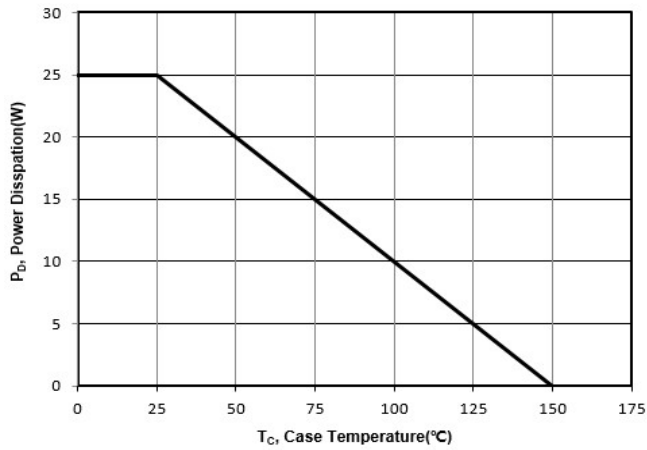


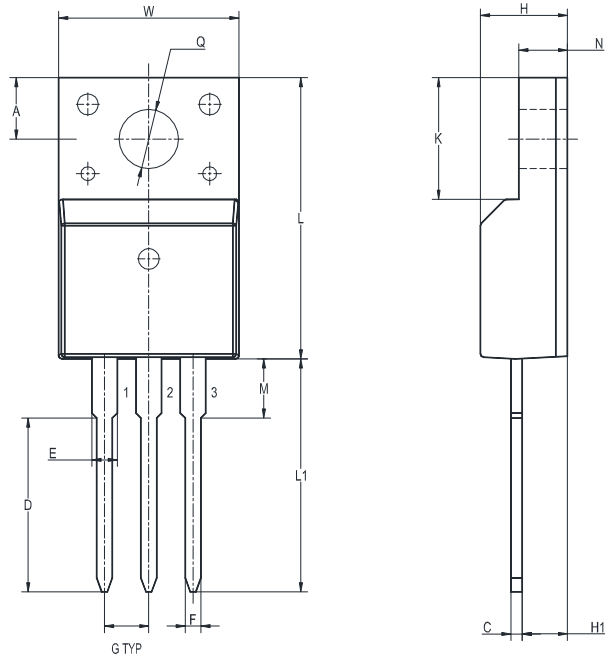
Fig 7. Power Derating Curve



# 2SD2060F-HAF

## Package Outline(Dimension in mm)

## TO-220F



UNIT	A	C	D	E	F	G	W	H	H1	Q	L	L1	M	K	N
mm	3.5	0.7	10.3	1.5	0.9	2.54	10.5	4.9	2.9	3.4	16	13.5	3.5	6.7	2.8
	2.8	0.4	9.7	1.1	0.7	TYP.	9.5	4.5	2.5	2.9	15	12.5	2.9	6.2	2.3

### Packing information

Package	Carton Quantity	Box Quantity	Base Quantity	Delivery Mode
TO-220F	5 K / Carton	1 K / Box	50 pcs / Tube	Tube

### Marking information

" 2SD2060\*F " = Part No. (" \* " = HFE grouping Code)

"YYWW" = Date Code Marking

"Y" = Year (ex: 19 = 2019)

"W" = Week (ex: 09 = the 9th week of the year)

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