

## Product Summary (Per Leg)

V <sub>RRM</sub> (V)	I <sub>o</sub> (A)	V <sub>F</sub> Max (V) @ +25°C	I <sub>R</sub> Max (μA) @ +25°C
120	10	0.83	30

## Features

- Low-Forward Voltage Drop
- Excellent High-Temperature Stability
- Soft, Fast Switching Capability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](#) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

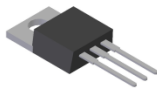
## Description and Applications

The SDT20120GCT, SDT20120GCTFP provides very low V<sub>F</sub> and extremely excellent reverse leakage stability at high temperatures. It is ideal for use as a rectifier, freewheel diode or blocking diode in:

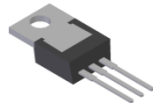
- DC-DC converters
- AC-DC adaptors

## Mechanical Data

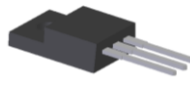
- Package: TO220AB, ITO220AB
- Package Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (e3)
- Weight: TO220AB (Generic) – 1.85 grams (Approximate)  
ITO220AB (Type WX) – 1.65 grams (Approximate)



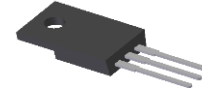
TO220AB (Generic)  
Top View



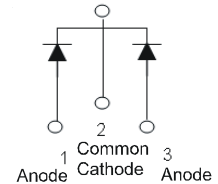
TO220AB (Generic)  
Bottom View



ITO220AB (Type WX)  
Top View



ITO220AB (Type WX)  
Bottom View



Package Pinout  
Configuration

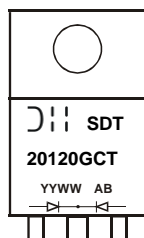
## Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
SDT20120GCT	TO220AB (Generic)	50 Pieces	Tube
SDT20120GCTFP	ITO220AB (Type WX)	50 Pieces	Tube

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

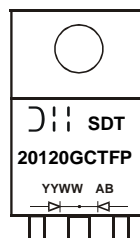
## Marking Information

TO220AB (Generic)



⌋⌋⌋ = Manufacturer's Code Marking  
SDT20120GCT = Product Type Marking Code  
AB = Foundry and Assembly Code  
YYWW = Date Code Marking  
YY = Last Two Digits of Year (ex: 24 = 2024)  
WW = Week (01 to 53)

ITO220AB (Type WX)



⌋⌋⌋ = Manufacturer's Code Marking  
SDT20120GCTFP = Product Type Marking Code  
AB = Foundry and Assembly Code  
YYWW = Date Code Marking  
YY = Last Two Digits of Year (ex: 24 = 2024)  
WW = Week (01 to 53)

### Maximum Ratings (Per Leg) (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V <sub>RRM</sub>	120	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>RM</sub>		
Average Rectified Output Current per Device (Per Leg) (Total)	I <sub>O</sub>	10 20	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine Wave Superimposed on Rated Load (with terminals 1 and 3 short circuited)	I <sub>FSM</sub>	250	A

### Thermal Characteristics (Per Leg)

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance (Note 5)	R <sub>θJC</sub>	2	°C/W
Package = TO220AB (Generic)			
Package = ITO220AB (Type WX)			
Operating and Storage Temperature Range (Note 6)	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

### Electrical Characteristics (Per Leg) (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V <sub>F</sub>	—	—	0.83	V	I <sub>F</sub> = 10A, T <sub>J</sub> = +25°C
				0.76		I <sub>F</sub> = 10A, T <sub>J</sub> = +125°C
Leakage Current (Note 7)	I <sub>R</sub>	—	—	30	μA	V <sub>R</sub> = 120V, T <sub>J</sub> = +25°C
				17		V <sub>R</sub> = 120V, T <sub>J</sub> = +125°C

- Notes:
5. With 50mm\*50mm\*23mm Al heatsink.
  6. The heat generated must be less than thermal conductivity from junction-to-ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ .
  7. Short duration pulse test used to minimize self-heating effect.

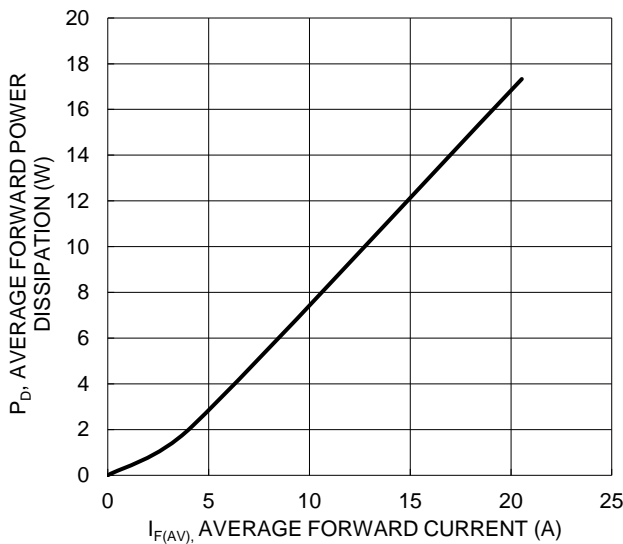


Figure 1. Forward Power Dissipation

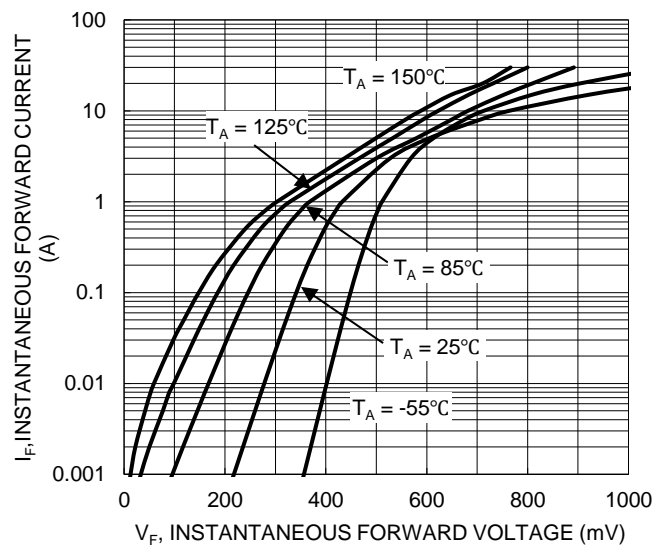


Figure 2. Typical Forward Characteristics

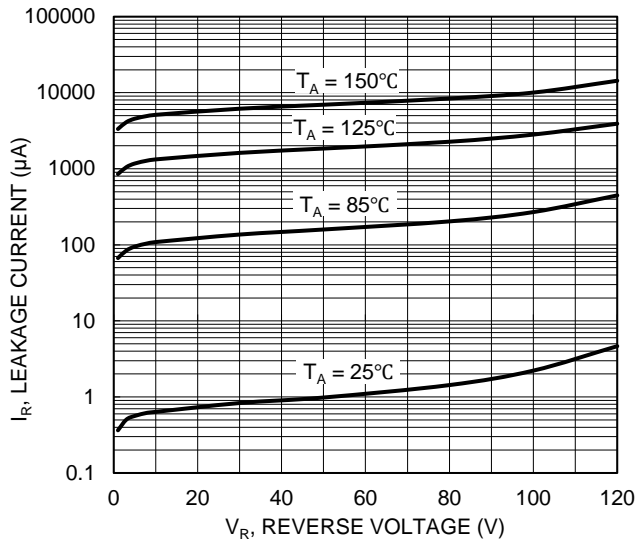


Figure 3. Typical Reverse Characteristics

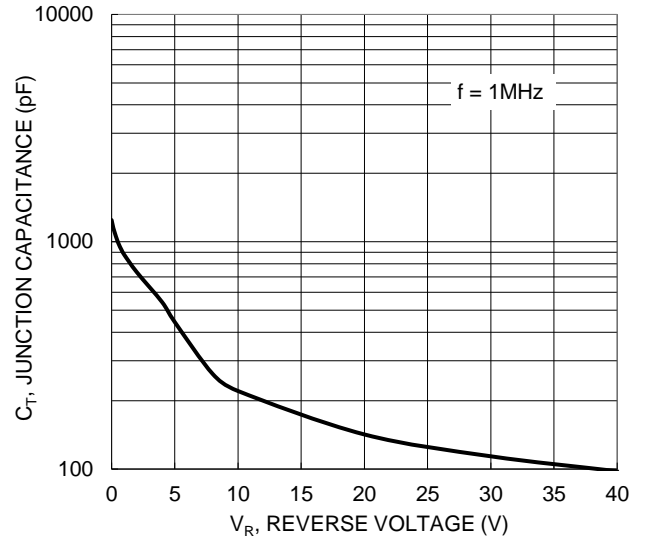


Figure 4. Typical Junction Capacitance

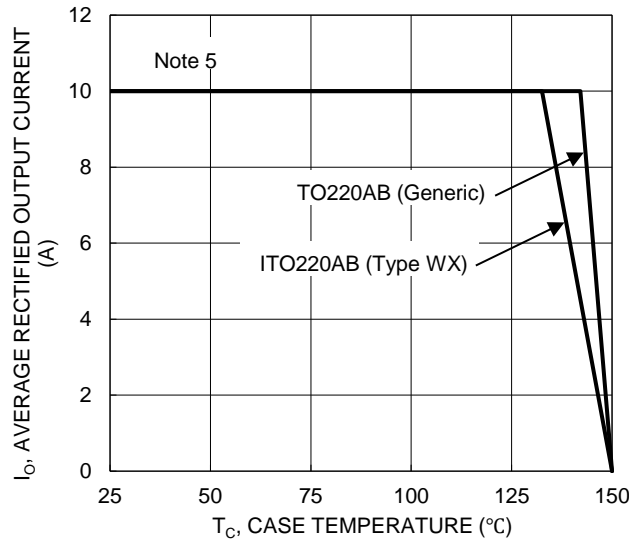
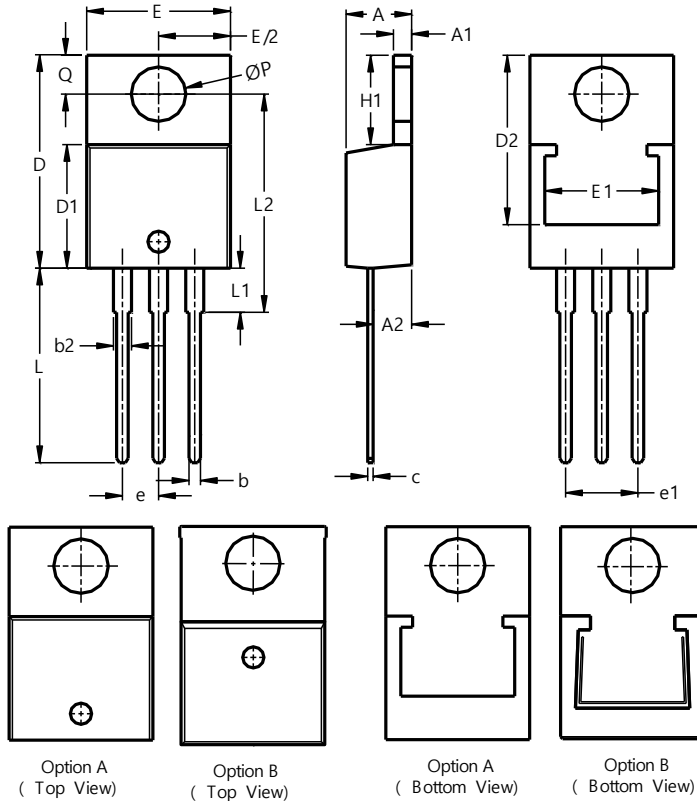


Figure 5. DC Forward Current Derating

## Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

### (1) Package Type: TO220AB (Generic)

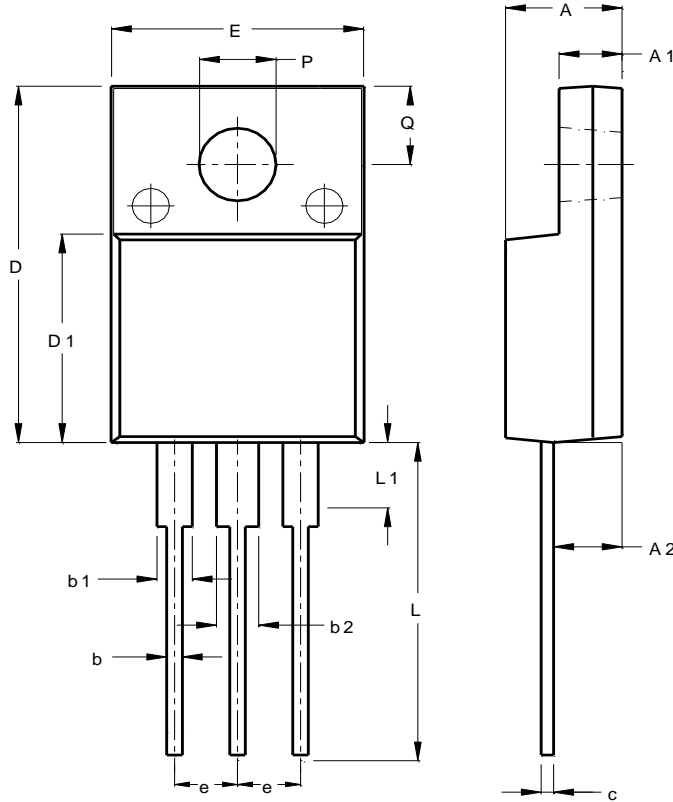


TO220AB (Generic)			
Dim	Min	Max	Typ
A	3.56	4.82	-
A1	0.51	1.39	-
A2	2.04	2.92	-
b	0.39	1.01	0.81
b2	1.15	1.77	1.24
c	0.356	0.61	-
D	14.22	16.51	-
D1	8.39	9.01	-
D2	11.45	12.87	-
e	-	-	2.54
e1	-	-	5.08
E	9.66	10.66	-
E1	6.86	8.89	-
H1	5.85	6.85	-
L	12.70	14.73	-
L1	-	4.42	-
L2	15.80	17.51	16.00
P	3.54	4.08	-
Q	2.54	3.42	-
All Dimensions in mm			

**Package Outline Dimensions** (Continued)

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

(2) Package Type: ITO220AB (Type WX)



ITO220AB (Type WX)		
Dim	Min	Max
A	4.46	4.87
A1	2.48	2.80
A2	2.50	2.80
b	0.50	0.80
b1	1.15	1.70
b2	1.50	1.90
c	0.45	0.70
D	14.95	15.95
D1	8.50	8.80
E	10.00	10.40
e	2.40	2.70
L	13.00	13.70
L1	3.30	3.90
Q	2.76	3.36
P	3.00	3.30
All Dimensions in mm		

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