NTSW60200CTG

Product Preview

Very Low Forward Voltage Trench-based Schottky Rectifier

Exceptionally Low V_F = 0.60 V at I_F = 10 A

ON Semiconductor®

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VERY LOW FORWARD VOLTAGE, LOW LEAKAGE SCHOTTKY BARRIER RECTIFIERS 60 AMPERES, 200 VOLTS

Features

- Fine Lithography Trench−based Schottky Technology for Very Low Forward Voltage and Low Leakage
- Fast Switching with Exceptional Temperature Stability
- Low Power Loss and Lower Operating Temperature
- Higher Efficiency for Achieving Regulatory Compliance
- Low Thermal Resistance
- High Surge Capability
- These Devices are Pb−Free and Halogen Free/BFR Free

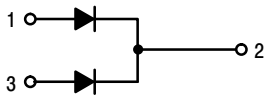
Typical Applications

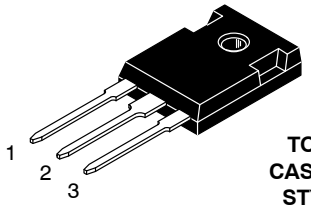
- Switching Power Supplies including Telecom AC to DC Power Stages
- High Voltage DC−DC Converters
- Freewheeling and OR−ing Diodes
- Output Rectifier in Welding Power Supplies
- Industrial Automation

Mechanical Characteristics

- Case: Epoxy, Molded
- Epoxy Meets Flammability Rating UL 94−0 @ 0.125 in
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Maximum for 10 sec

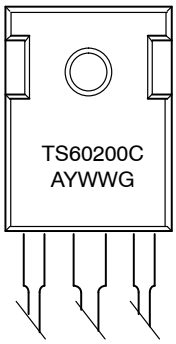
PIN CONNECTIONS





TO−247
CASE 340L
STYLE 2

MARKING DIAGRAM



A	= Assembly Location
Y	= Year
WW	= Work Week
G	= Pb−Free Package

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ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

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MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	200	V
Average Rectified Forward Current (Rated V_R, T_C = 112°C) Per device (Rated V_R, T_C = 133°C) Per diode	$I_{F(AV)}$	 60 30	A
Peak Repetitive Forward Current (Rated V_R, Square Wave, 20 kHz, T_C = 115°C) Per device (Rated V_R, Square Wave, 20 kHz, T_C = 128°C) Per diode	I_{FRM}	 120 60	A
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I_{FSM}	300	A
Operating Junction Temperature	T_J	−55 to +150	°C
Storage Temperature	T_{stg}	−55 to +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.

THERMAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Typical Thermal Resistance Junction−to−Case Per Diode Junction−to−Case Per Device	$R_{\theta JC}$	 0.72 0.63	°C/W
Junction−to−Ambient Per Diode Junction−to−Ambient Per Device	$R_{\theta JA}$	 40.62 40.17	

ELECTRICAL CHARACTERISTICS (Per Leg unless otherwise noted)

Rating	Symbol	Typ	Max	Unit
Instantaneous Forward Voltage (Note 1) (I_F = 10 A, T_J = 25°C) (I_F = 15 A, T_J = 25°C) (I_F = 30 A, T_J = 25°C) (I_F = 10 A, T_J = 125°C) (I_F = 15 A, T_J = 125°C) (I_F = 30A, T_J = 125°C)	V_F	 0.74 0.79 1.04 0.60 0.64 0.74	 − − 1.90 − − 0.85	V
Instantaneous Reverse Current (Note 1) (V_R = 180 V, T_J = 25°C) (Rated dc Voltage, T_J = 25°C) (V_R = 180 V, T_J = 125°C) (Rated dc Voltage, T_J = 125°C)	I_R	 3 5 5.3 7	 − 100 − 30	 μA μA mA mA

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.

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

ORDERING INFORMATION

Device	Package	Shipping
NTSW60200CTG	TO−220AB (Pb−Free, Halide Free)	30 Units / Rail

TYPICAL CHARACTERISTICS

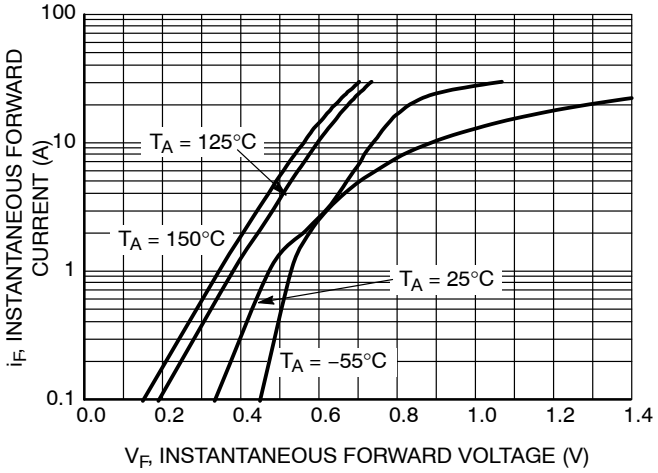


Figure 1. Typical Instantaneous Forward Characteristics

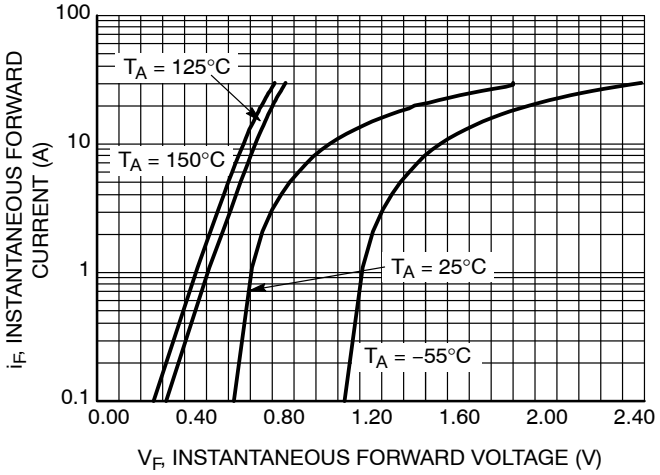


Figure 2. Maximum Instantaneous Forward Characteristics

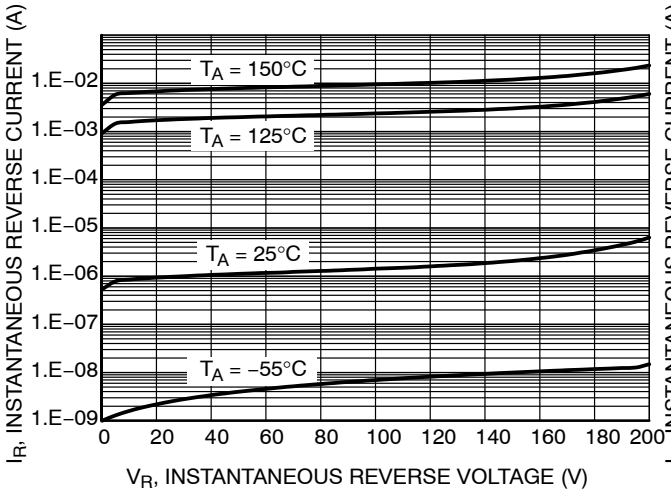


Figure 3. Typical Reverse Characteristics

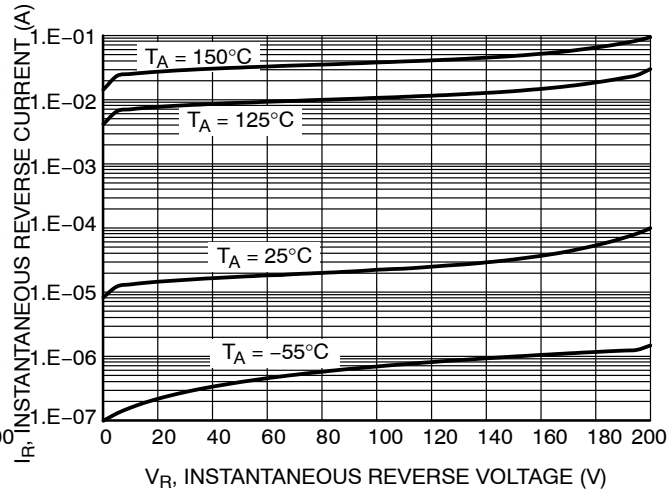


Figure 4. Maximum Reverse Characteristics

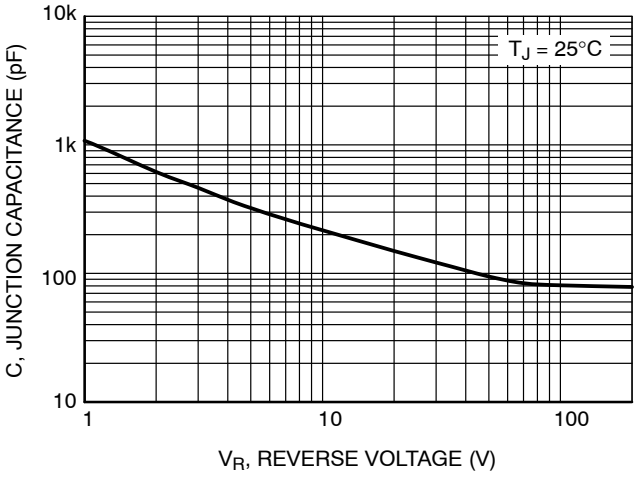


Figure 5. Typical Junction Capacitance

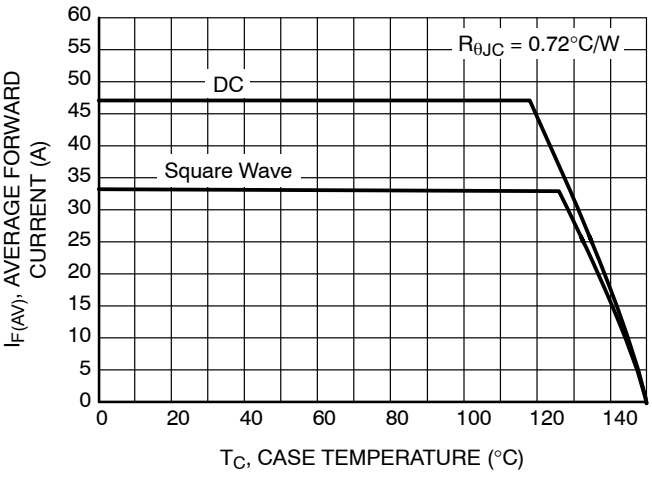


Figure 6. Current Derating per Diode

TYPICAL CHARACTERISTICS

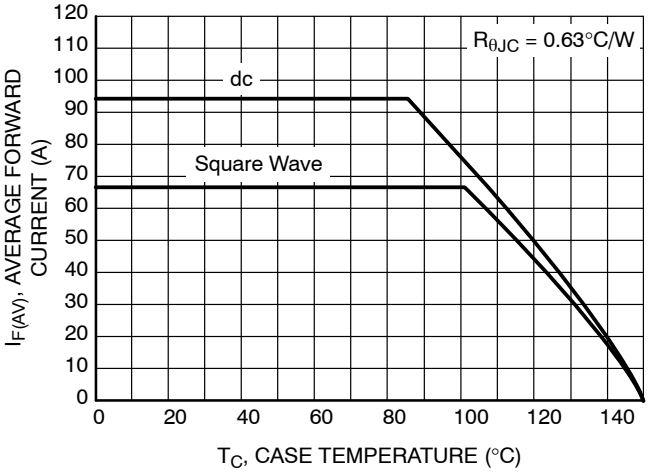


Figure 7. Current Derating per Device

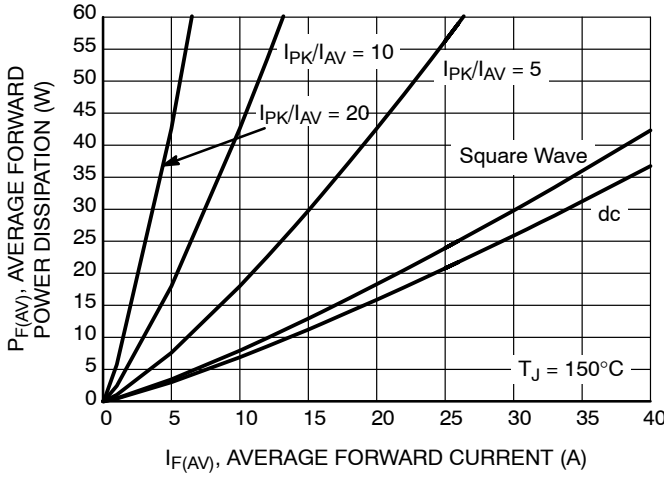


Figure 8. Forward Power Dissipation

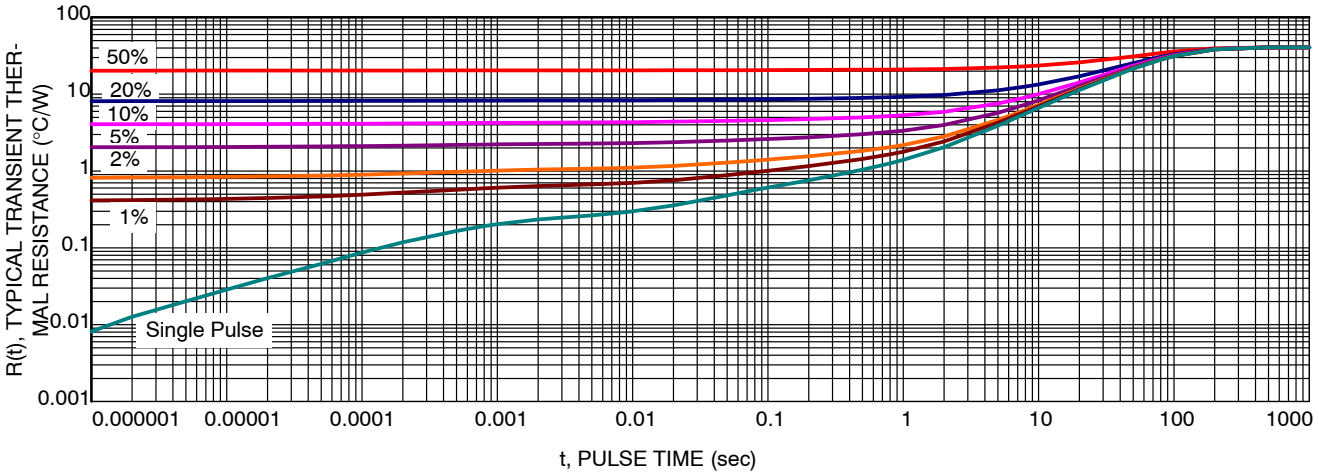
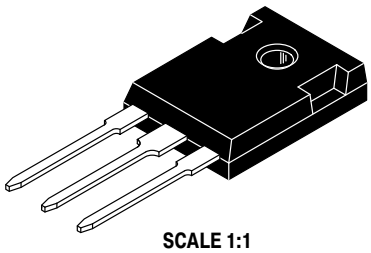


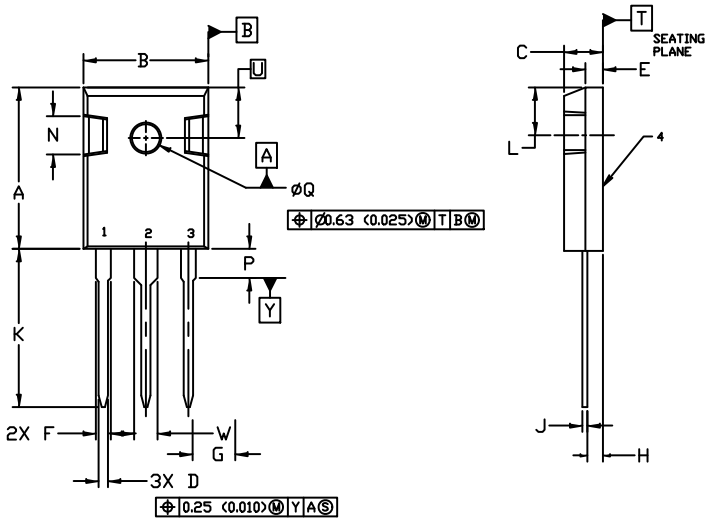
Figure 9. Typical Transient Thermal Response



SCALE 1:1

TO−247
CASE 340L
ISSUE G

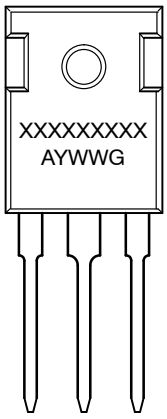
DATE 06 OCT 2021



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

	MILLIMETERS		INCHES	
DIM	MIN.	MAX.	MIN.	MAX.
A	20.32	21.08	0.800	0.830
B	15.75	16.26	0.620	0.640
C	4.70	5.30	0.185	0.209
D	1.00	1.40	0.040	0.055
E	1.90	2.60	0.075	0.102
F	1.65	2.13	0.065	0.084
G	5.45 BSC		0.215 BSC	
H	1.50	2.49	0.059	0.098
J	0.40	0.80	0.016	0.031
K	19.81	20.83	0.780	0.820
L	5.40	6.20	0.212	0.244
N	4.32	5.49	0.170	0.216
P	----	4.50	----	0.177
Q	3.55	3.65	0.140	0.144
U	6.15 BSC		0.242 BSC	
W	2.87	3.12	0.113	0.123

GENERIC MARKING DIAGRAM*



STYLE 1:
PIN 1. GATE
2. DRAIN
3. SOURCE
4. DRAIN

STYLE 2:
PIN 1. ANODE
2. CATHODE (S)
3. ANODE 2
4. CATHODES (S)

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

STYLE 4:
PIN 1. GATE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

STYLE 5:
PIN 1. CATHODE
2. ANODE
3. GATE
4. ANODE

STYLE 6:
PIN 1. MAIN TERMINAL 1
2. MAIN TERMINAL 2
3. GATE
4. MAIN TERMINAL 2

XXXXX = Specific Device Code
A = Assembly Location
Y = Year
WW = Work Week
G = Pb−Free Package

*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.

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