

Advance Information

Power Manager™

Gallium Arsenide Power Rectifier

MGR2025CT

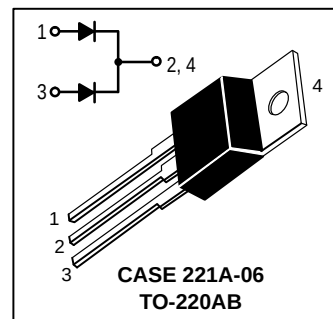
... ideally suited for high frequency power supplies, free wheeling diodes, and as polarity protection diodes, these state-of-the-art devices have the following features:

- Planar Epitaxial Construction
- Nitride Passivation for Stable Blocking Characteristics
- Monolithic Dual Die Construction – May be Paralleled for High Current Output (10A per leg or 20A per package)
- Epoxy Meets UL94, V_O @ 1/8"
- Hyperfast and Soft Reverse Recovery Over Specified Temperature Range (15 ns)

Mechanical Characteristics

- Case: Epoxy, Molded
- Weight: 1.9 grams (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped 50 units per plastic tube
- Marking: MGR2025CT

**GALLIUM ARSENIDE
RECTIFIER
20 AMPERES
250 VOLTS**



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	250	V
DC Forward Current ($T_C = 95^\circ\text{C}$) Per Leg	I_{DC}	10	A
Peak Repetitive Forward Current (At Rated V_R , Square Wave, 20 kHz, $T_C = 25^\circ\text{C}$) Per Leg	I_{FRM}	20	A
Non-Repetitive Peak Surge Current (Surge applied at rated load conditions, halfwave, single phase, 60 Hz) Per Package	I_{FSM}	40	A
Operating Junction Temperature and Storage Temperature	T_J, T_{Stg}	-55 to 175	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Thermal Resistance – Junction to Case	Per Leg	$R_{\theta JC}$	3.1	$^\circ\text{C/W}$
Thermal Resistance – Junction to Ambient	Per Leg	$R_{\theta JA}$	64	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (1), see Figure 2 ($I_F = 10\text{ A}$) ($I_F = 5\text{ A}$)	Per Leg	V_F	$T_J = 25^\circ\text{C}$ 2.2 1.5	$T_J = 125^\circ\text{C}$ 2.5 1.6	V
Maximum Instantaneous Reverse Current, see Figure 4 ($V_R = 250\text{ V}$) ($V_R = 125\text{ V}$)	Per Leg	I_R	$T_J = 25^\circ\text{C}$ 25 2	$T_J = 125^\circ\text{C}$ 440 125	μA
Typical Reverse Recovery Time (2) ($V_R = 200\text{ V}$, $I_F = 5\text{ A}$, $di/dt = 200\text{ A}/\mu\text{s}$) ($V_R = 200\text{ V}$, $I_F = 10\text{ A}$, $di/dt = 200\text{ A}/\mu\text{s}$)	Per Leg	t_{rr}	$T_J = 25^\circ\text{C}$ 11.8 12.2	$T_J = 125^\circ\text{C}$ 12.0 12.2	ns
Typical Peak Reverse Recovery Current ($V_R = 200\text{ V}$, $I_F = 5\text{ A}$, $di/dt = 200\text{ A}/\mu\text{s}$) ($V_R = 200\text{ V}$, $I_F = 10\text{ A}$, $di/dt = 200\text{ A}/\mu\text{s}$)	Per Leg	I_{RM}	$T_J = 25^\circ\text{C}$ 1.4 1.5	$T_J = 125^\circ\text{C}$ 1.4 1.5	A

Note: This data sheet contains advance information only and is subject to change without notice.

(1) Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.

(2) t_{rr} measured projecting from 25% of I_{RM} to ground.

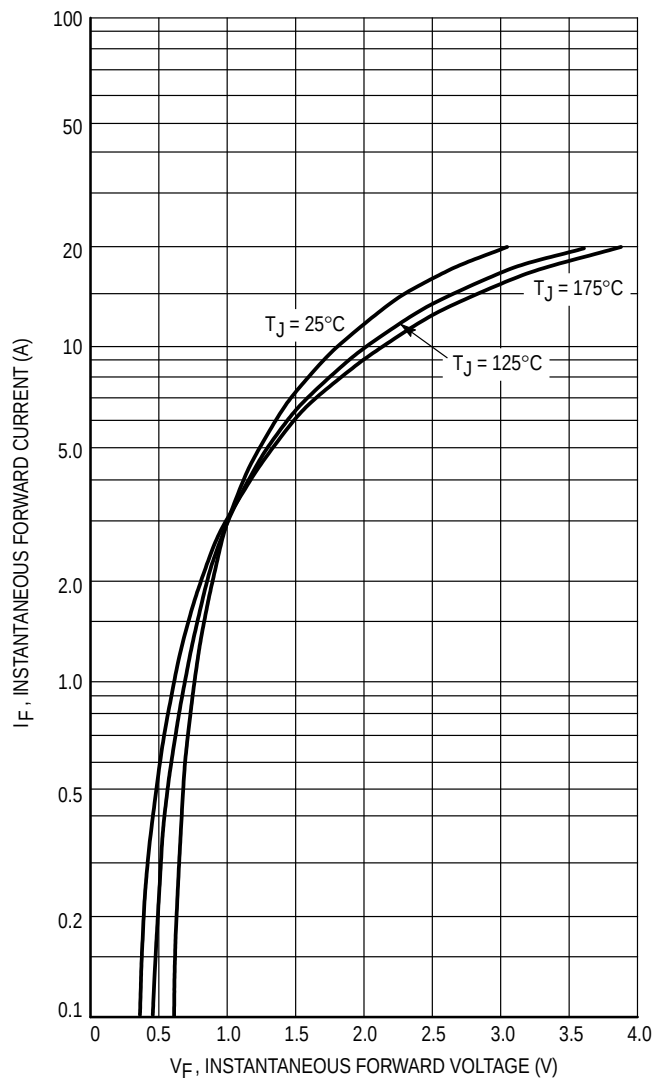


Figure 1. Typical Forward Voltage

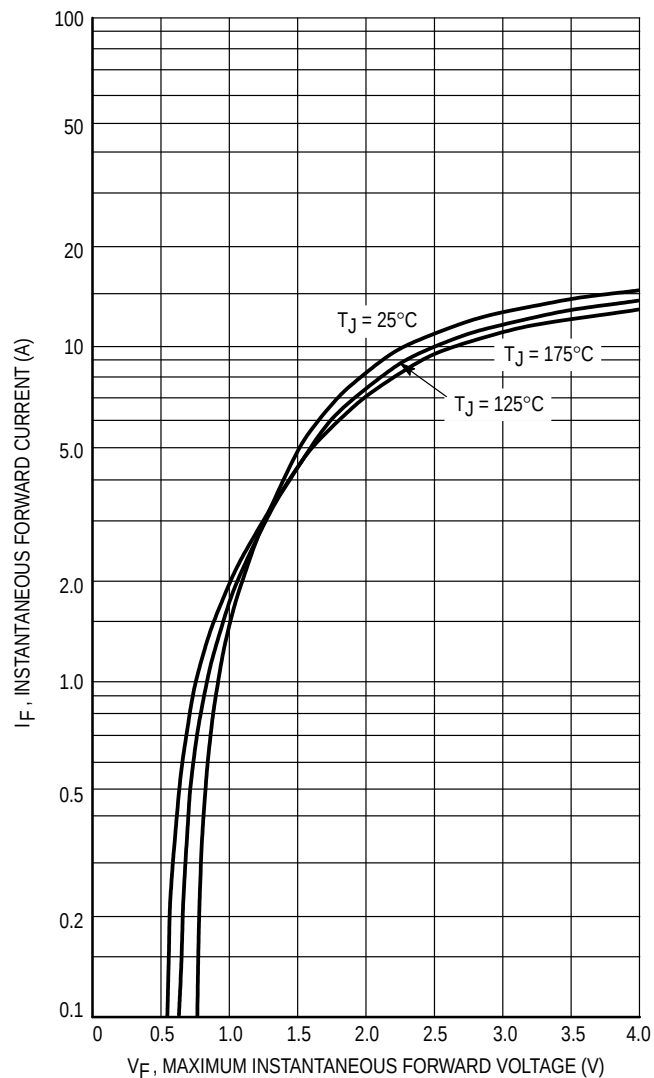


Figure 2. Maximum Forward Voltage

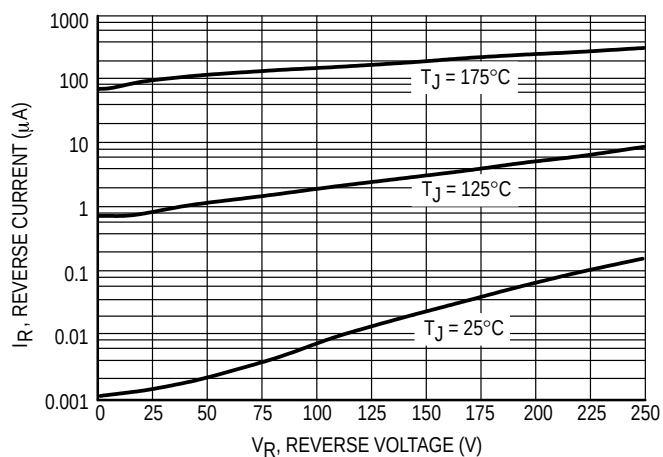


Figure 3. Typical Reverse Current

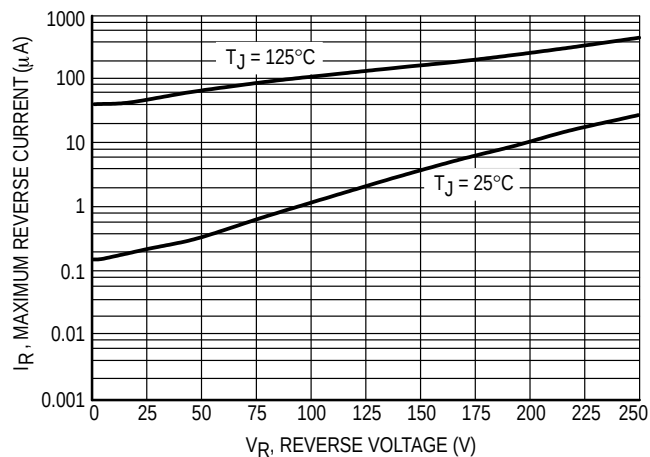


Figure 4. Maximum Reverse Current

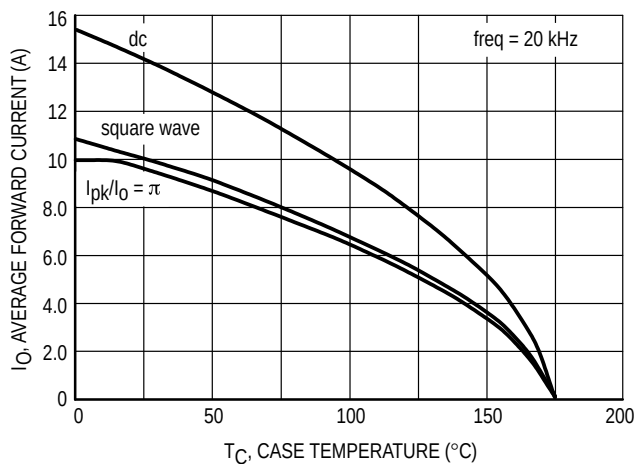


Figure 5. Current Derating Per Leg

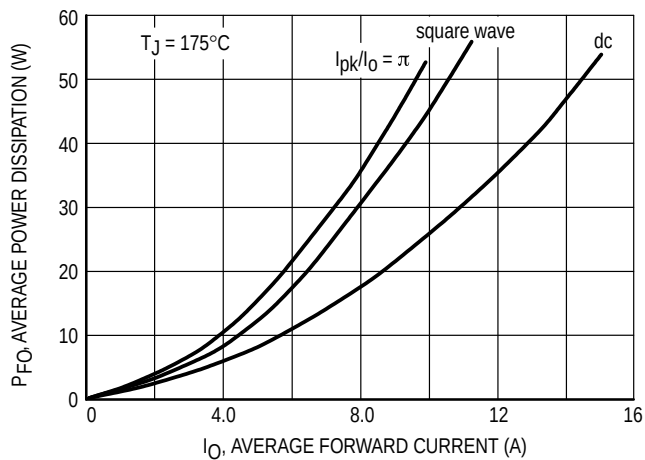


Figure 6. Forward Power Dissipation Per Leg

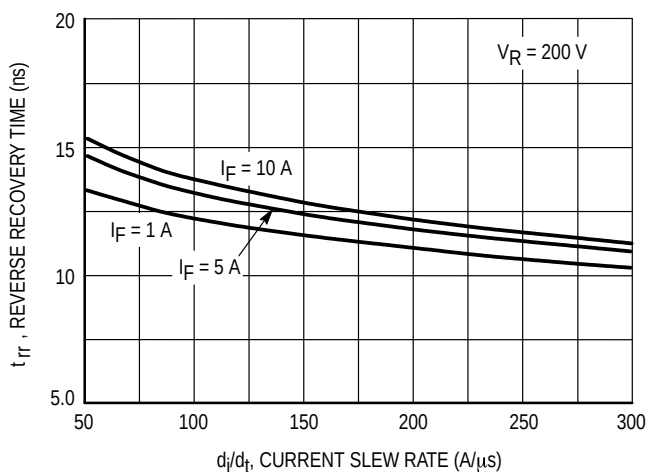


Figure 7. Typical t_{rr} Characteristics, $T_J = 25^\circ\text{C}$

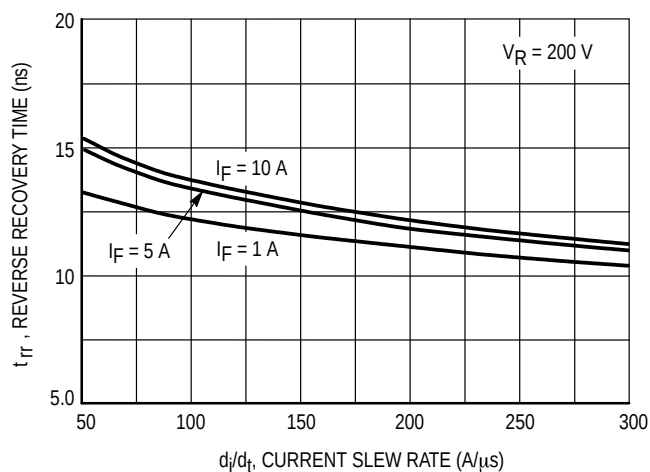


Figure 8. Typical t_{rr} Characteristics, $T_J = 125^\circ\text{C}$

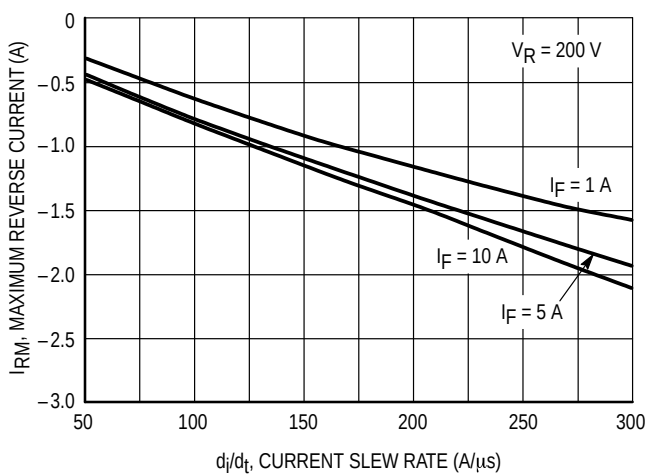


Figure 9. Typical I_{RM} Characteristics, $T_J = 25^\circ\text{C}$

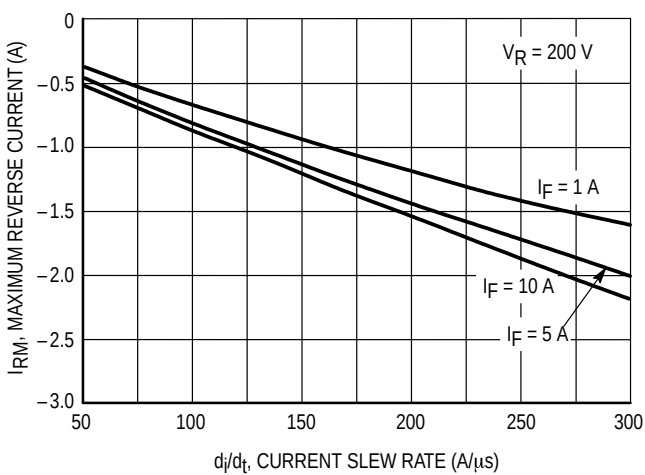


Figure 10. Typical I_{RM} Characteristics, $T_J = 125^\circ\text{C}$

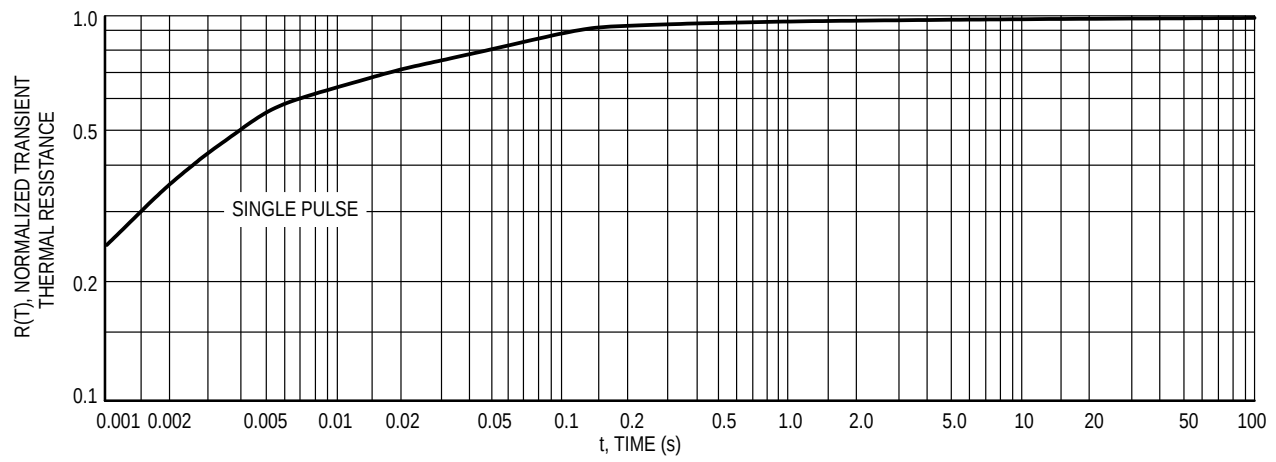


Figure 11. Typical Thermal Response

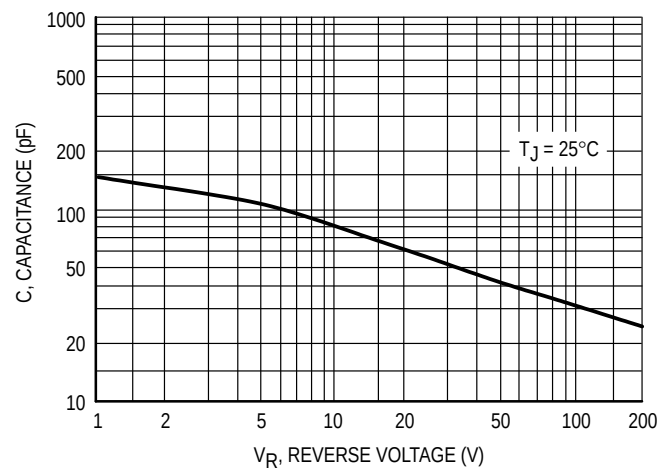
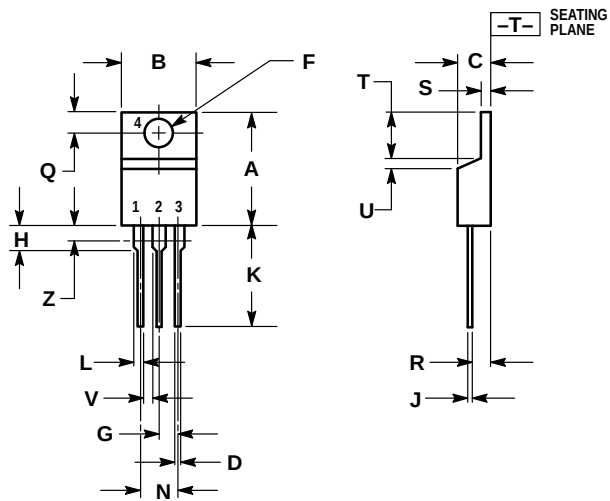


Figure 12. Typical Capacitance

PACKAGE DIMENSIONS



STYLE 6:
PIN 1. ANODE
2. CATHODE
3. ANODE
4. CATHODE

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.018	0.025	0.46	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	—	1.15	—
Z	—	0.080	—	2.04

CASE 221A-06
ISSUE Y

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