

## Features

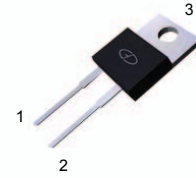
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- High-Frequency Operation
- Temperature Independent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on VF
- RoHS Compliance

## Benefits

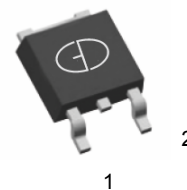
- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- High Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

## Applications

- Switching Mode Power Supply
- Power Factor Correction



**TO-220AC  
GS2S06005A**



**TO-252  
GS2S06005B**



**Schematic Diagram**

## Maximum Ratings (T<sub>A</sub> =25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Value	Unit
Repetitive Peak Reverse Voltage	V <sub>RRM</sub>	T <sub>J</sub> =25°C	600	V
Surge Peak Reverse Voltage	V <sub>RSM</sub>	T <sub>J</sub> =25°C	600	
DC Blocking Voltage	V <sub>DC</sub>	T <sub>J</sub> =25°C	600	
Continuous Forward Current	I <sub>F</sub>	T <sub>J</sub> =150°C	5	A
Repetitive Peak Forward Surge Current	I <sub>FRM</sub>	T <sub>C</sub> =25°C , tp=10ms, Half Sine Wave, D=0.3	45	A
Non-Repetitive Peak Forward Surge Current	I <sub>FSM</sub>	T <sub>C</sub> =25°C , tp=10ms, Half Sine Wave, D=0.3	75	A
Power Dissipation	P <sub>TOT</sub>	T <sub>C</sub> =25°C	90	W
		T <sub>C</sub> =110°C	39	W
Reverse Recovery Time	T <sub>rr</sub>	I <sub>F</sub> =5A, di/dt=200A/μs	10	ns
Operating Junction and Storage Temperature	T <sub>J</sub> , T <sub>STG</sub>		-55 to 175	°C

## Thermal Characteristics

Parameter	Symbol	Typ.	Unit
Thermal Resistance from Junction to Case	R <sub>th JC</sub>	<b>TO-220</b> 1.67	°C/W
	R <sub>th JC</sub>	<b>TO-252</b> 1.37	°C/W

**Electrical Characteristics** ( $T_A=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Numerical			Unit
			Min.	Typ.	Max.	
Forward Voltage	$V_F$	$I_F=5\text{A}, T_J=25^\circ\text{C}$	-	1.35	1.8	V
		$I_F=5\text{A}, T_J=175^\circ\text{C}$	-	1.75	2.4	
Reverse Current	$I_R$	$V_R=600\text{V}, T_J=25^\circ\text{C}$	-	7.1	100	uA
		$V_R=600\text{V}, T_J=175^\circ\text{C}$	-	15	200	
Total Capacitive Charge	$Q_C$	$V_R=600\text{V}, I_F=5\text{A}, di/dt=500\text{A/us}, T_J=25^\circ\text{C}$	-	15	-	nC
Total Capacitance	C	$V_R=0\text{V}, T_J=25^\circ\text{C}, f=1\text{MHz}$	-	230	-	pF
		$V_R=200\text{V}, T_J=25^\circ\text{C}, f=1\text{MHz}$	-	32	-	
		$V_R=400\text{V}, T_J=25^\circ\text{C}, f=1\text{MHz}$	-	30	-	

**Typical Characteristic Curves**

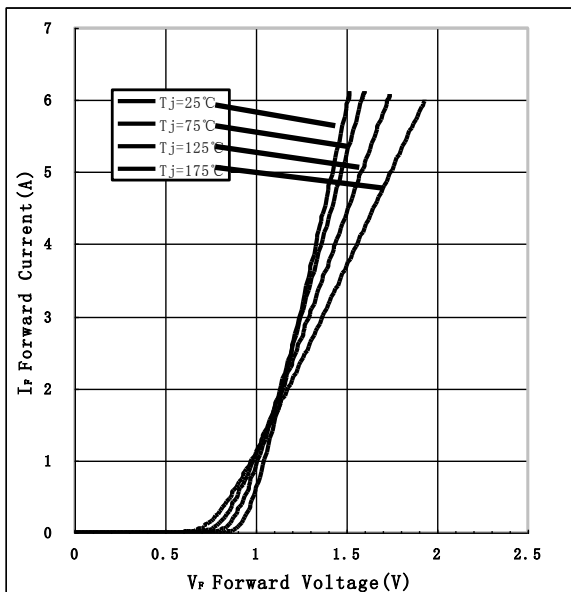


Figure 1. Forward Characteristics

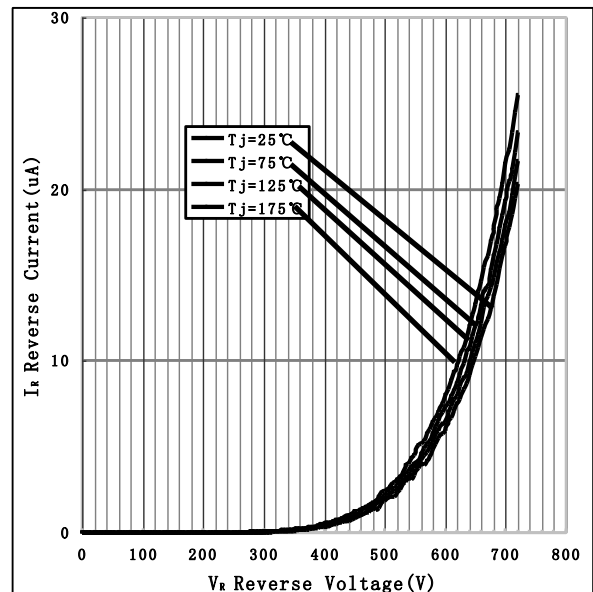
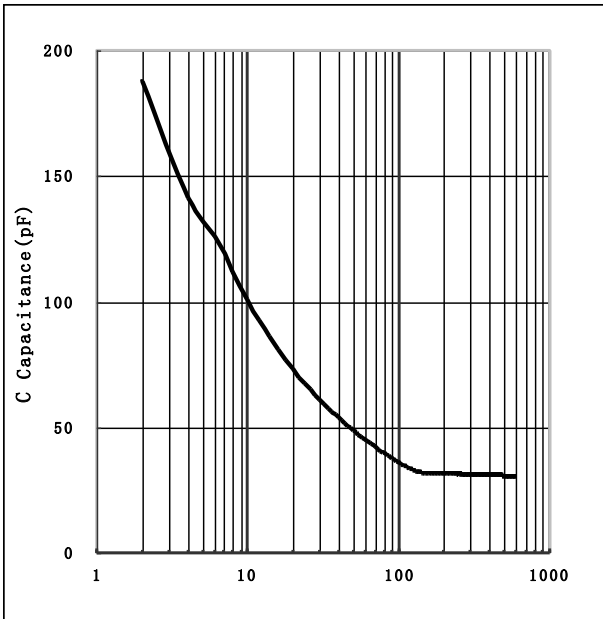
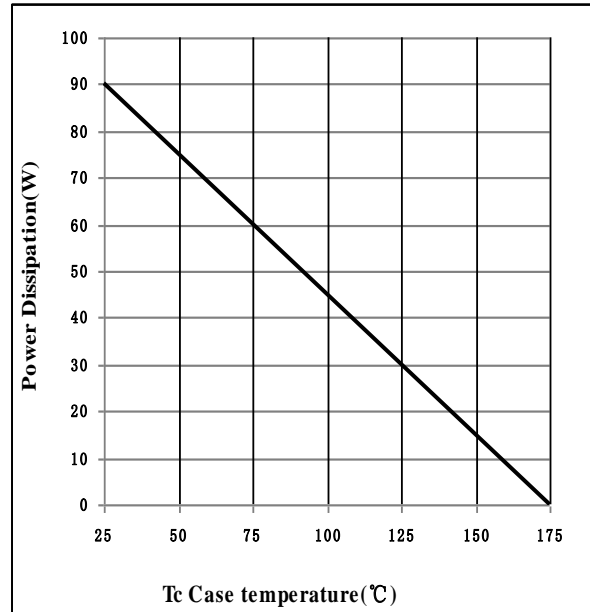


Figure 2. Reverse Characteristics

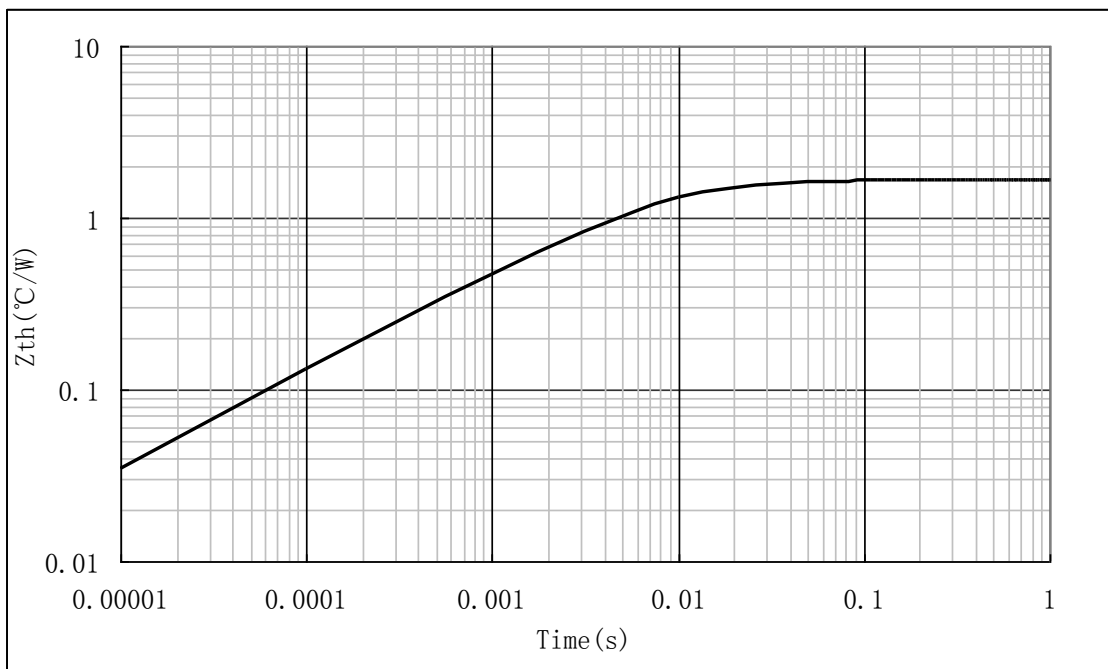
**Typical Characteristic Curves**



**Figure 3. Capacitance vs. Reverse Voltage**



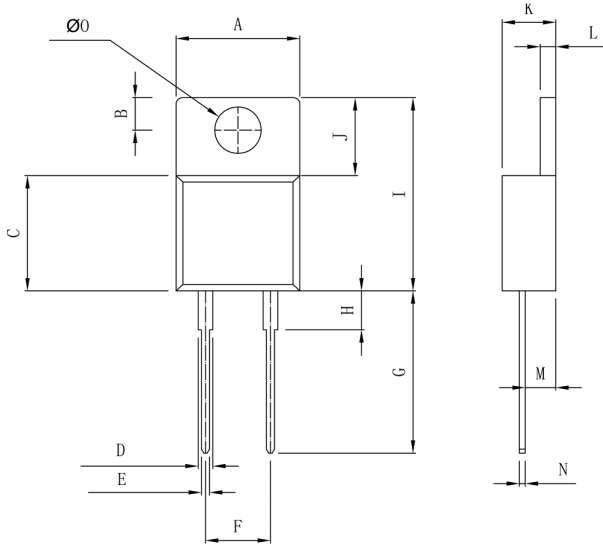
**Figure 4. Power Derating**



**Figure 5. Transient Thermal Impedance**

**Product Outline Dimensions**

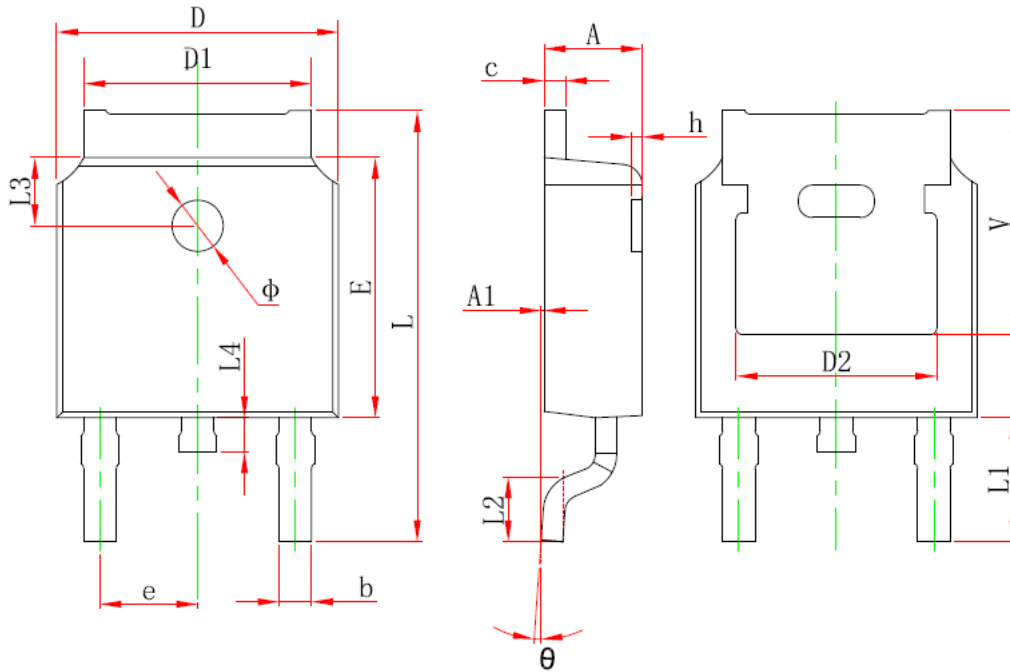
**TO-220AC**



DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	9.677	9.931	0.381	0.391
B	2.540	3.048	0.100	0.120
C	9.018	9.271	0.355	0.365
D	1.144	1.397	0.145	0.055
E	0.635	0.889	0.025	0.035
F	5.080		0.200	
G	12.701	12.954	0.500	0.511
H	3.049	3.303	0.120	0.130
I	15.113	16.620	0.595	0.615
J	6.096	6.350	0.240	0.250
K	4.191	4.699	0.165	0.185
L	1.219	1.321	0.048	0.052
M	2.386	2.489	0.094	0.098
N	0.458	0.635	0.018	0.025
ØO	3.632	3.734	0.143	0.146

**Product Outline Dimensions**

**TO-252**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	