

Features

- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behavior
- High temperature operation
- High frequency operation

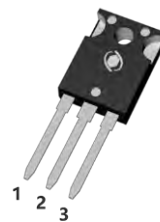
V_{RRM}	650V
$I_F (T_C = 159^\circ\text{C})$	6A*
Q_c	22nC*

Benefits

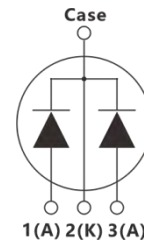
- Unipolar rectifier
- Substantially reduced switching losses
- No thermal run-away with parallel devices
- Reduced heat sink requirements

Applications

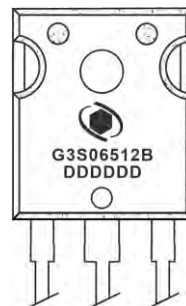
- SMPS, PFC
- Solar application, UPS, EV/HEV
- Motor drives, Wind turbine, Rail traction



TO-247AB



Inner Circuit



G = GPT
3 = Gen3
S = SiC Schottky Diode
065 = Voltage Rating 650V
12 = Current Rating 12A
B = TO-247AB
DDDDDD = Traceable Code



Maximum Ratings (at $T_j = 25\text{ }^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	650	V
Surge Peak Reverse Voltage	V_{RSM}	650	V
Continuous Forward Current $T_c = 25^\circ\text{C}$ $T_c = 135^\circ\text{C}$ $T_c = 159^\circ\text{C}$	I_F	22.7* 10.6* 6*	A
Repetitive Peak Forward Surge Current $T_c = 25^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Pulse	I_{FRM}	30*	A
Non-Repetitive Forward Surge Current $T_c = 25^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Pulse	I_{FSM}	66*	A
i^2t Value $T_c = 25^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Pulse	$\int i^2 dt$	21.78*	A^2s
Power Dissipation $T_c = 25^\circ\text{C}$ $T_c = 110^\circ\text{C}$	P_{tot}	91* 39*	W
Operating Junction Range	T_j	-55 to +175	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +175	$^\circ\text{C}$
Mounting Torque, M3 Screw	M	1	Nm

Electrical Characteristics (at $T_J = 25^\circ\text{C}$, unless otherwise specified, Per leg)

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
DC Blocking Voltage	V_{DC}		650	-	-	V
Forward Voltage	V_F	$I_F = 6\text{A}$ $T_J = 25^\circ\text{C}$	-	1.36	1.7	V
		$T_J = 175^\circ\text{C}$	-	1.64	2	
Reverse Current	I_R	$V_R = 650\text{V}$ $T_J = 25^\circ\text{C}$	-	0.12	50	μA
		$T_J = 175^\circ\text{C}$	-	0.91	100	
Total Capacitance	C	$f = 1\text{MHz}$ $V_R = 0\text{V}$	-	440	-	pF
		$V_R = 200\text{V}$	-	42	-	
		$V_R = 400\text{V}$	-	41	-	
Total Capacitive Charge	Q_C	$V_R = 400\text{V}$ $T_J = 25^\circ\text{C}$	-	22	-	nC
Capacitance Stored Energy	E_C	$V_R = 400\text{V}$	-	5	-	μJ

Thermal Characteristics

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
Thermal Resistance, junction-case	$R_{th(j-c)}$		-	1.65* 0.825**	-	$^\circ\text{C/W}$

Typical Characteristics Curves (Per leg)

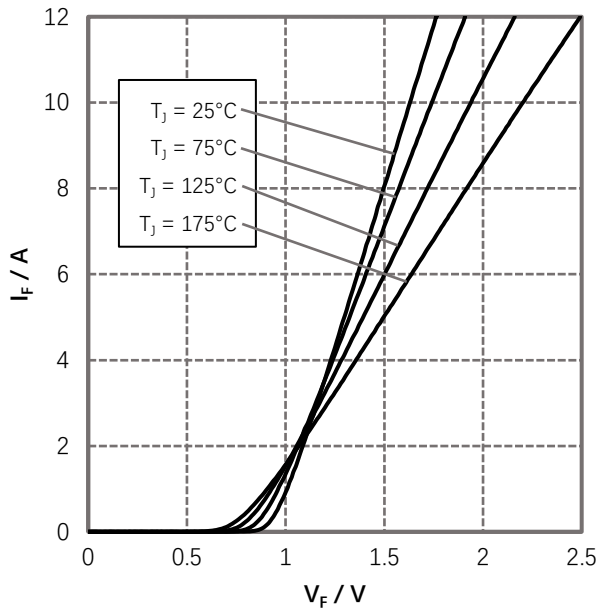


Figure 1. Forward Characteristics

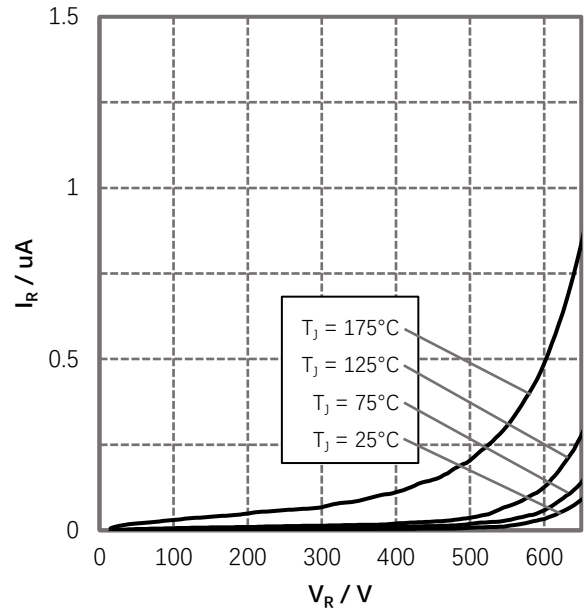


Figure 2. Reverse Characteristics

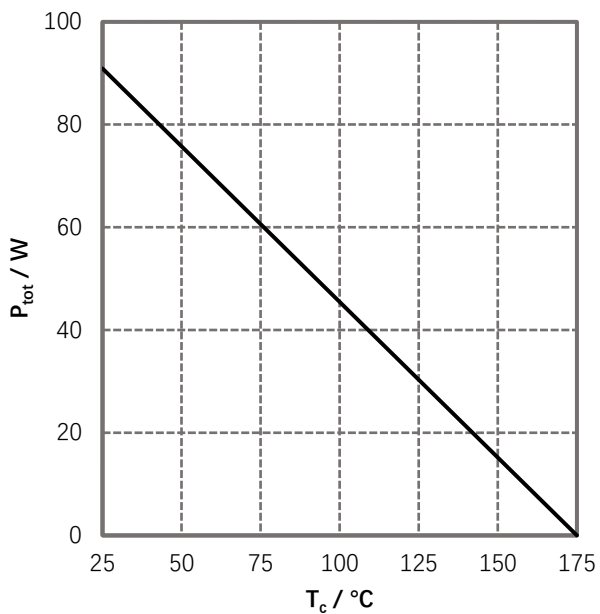


Figure 3. Power Derating

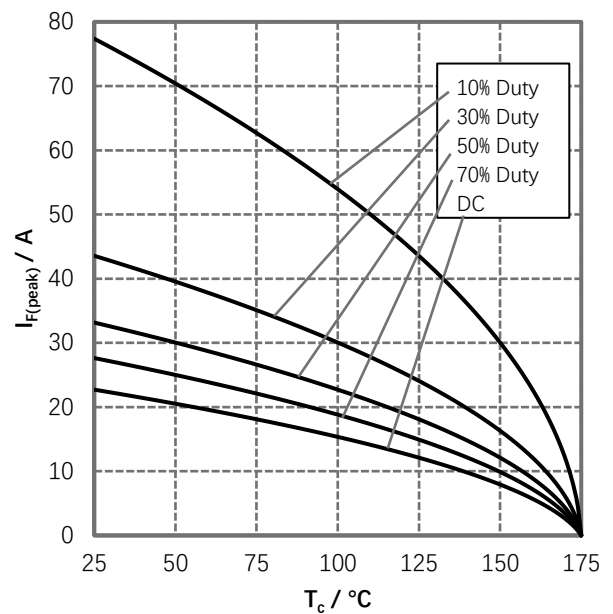


Figure 4. Current Derating

Typical Characteristics Curves (Per leg)

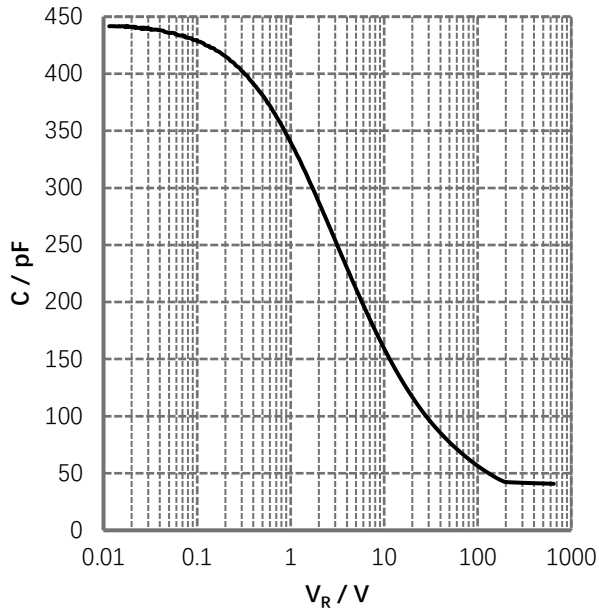


Figure 5. Capacitance vs. Reverse Voltage

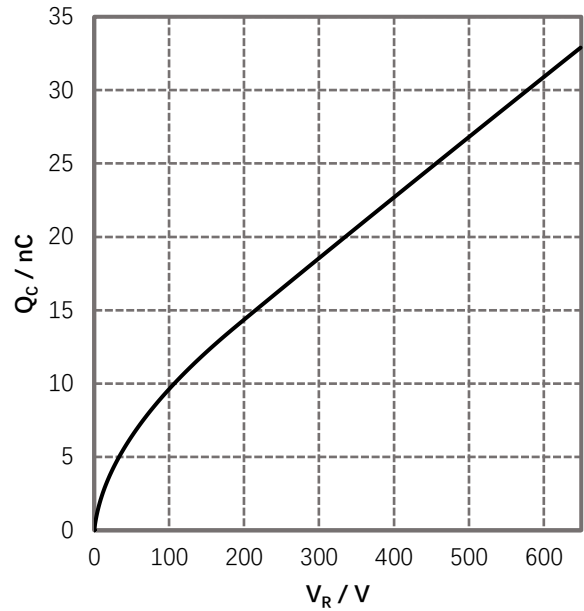


Figure 6. Reverse Charge vs. Reverse Voltage

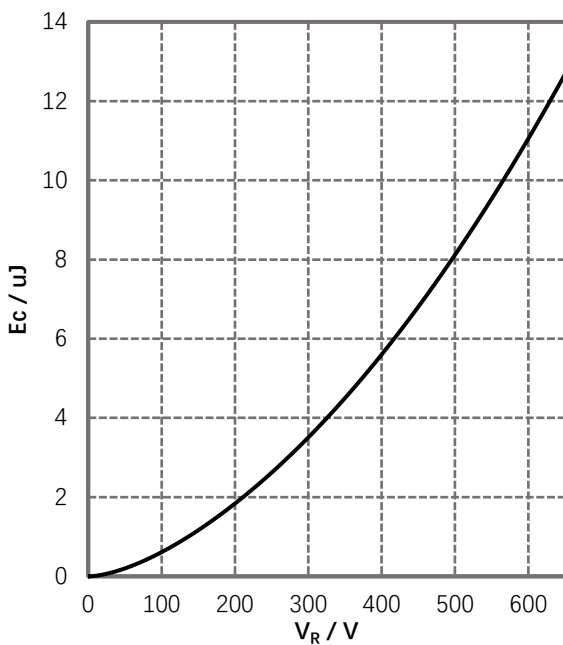


Figure 7. Capacitance Stored Energy

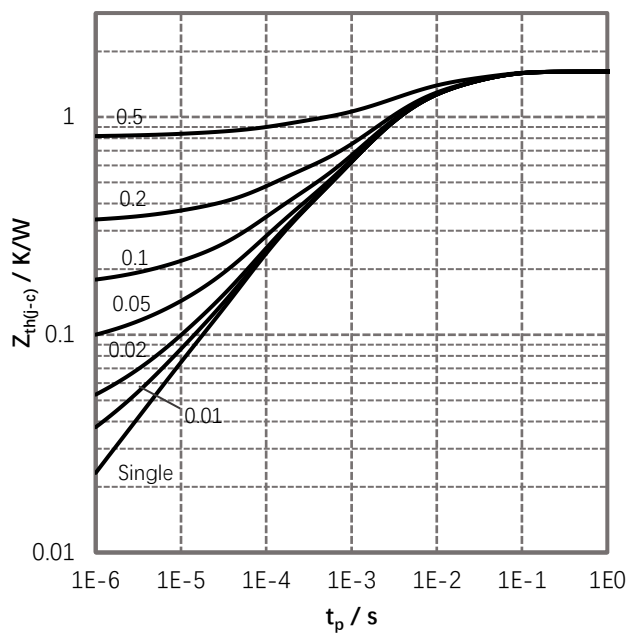
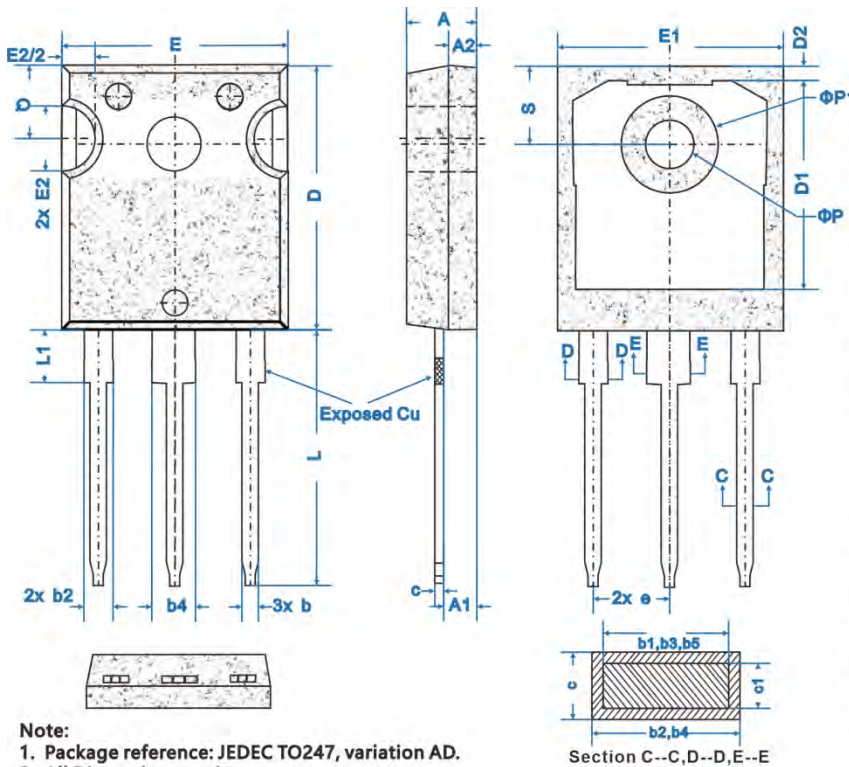


Figure 8. Transient Thermal Impedance

Package Dimensions



Unit: mm

Symbol	Dimensions			Notes
	Min.	NOM.	Max.	
A	4.83	5.02	5.21	
A1	2.29	2.41	2.55	
A2	1.50	2.00	2.49	
b	1.12	1.20	1.33	
b1	1.12	1.20	1.28	
b2	1.91	2.00	2.39	6
b3	1.91	2.00	2.34	
b4	2.87	3.00	3.18	6,8
b5	2.87	3.00	3.22	
c	0.55	0.60	0.69	6
c1	0.55	0.60	0.65	
D	20.80	20.95	21.10	4
D1	16.25	16.55	17.65	5
D2	0.51	1.19	1.35	
E	15.75	15.94	16.13	4
E1	13.46	14.02	14.16	5
E2	4.32	4.91	5.49	3
e	5.44 BSC			
L	19.81	20.07	20.32	
L1	4.10	4.19	4.40	6
ΦP	3.58	3.61	3.65	7
ΦP1	7.19 Ref.			
Q	5.39	5.79	6.20	
S	6.04	6.17	6.30	

Note:

1. Package reference: JEDEC TO247, variation AD.
2. All Dimensions are in mm.
3. Slot required, Notch may be rounded.
4. Dimension D & E do not include Mold Flash. Mold Flash shall not exceed 0.127mm per side. These dimension are measured at the outermost extreme of the Plastic Body.
5. Thermal Pad contour optional within dimension D1 & E1.
6. Lead finish uncontrolled in L1.
7. ΦP to have a maximum draft angle of 1.5° to the top of the part with a maximum hole diameter of 3.19mm.
8. Dimension "b2" and "b4" does not include Dambar Protrusion. Allowable Dambar protrusion shall be 0.10mm total in excess of "b2" and "b4" dimension at maximum material condition.

Ordering Information

Part Number	Marking	Package	Packaging Mode
G3S06512B	G3S06512B	TO-247AB	30pcs/Tube

Notes