

## 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

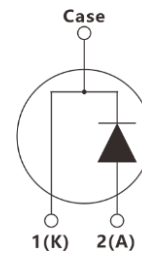
- Unipolar rectifier
- Substantially reduced switching losses
- No thermal run-away with parallel devices
- Reduced heat sink requirements

## Applications

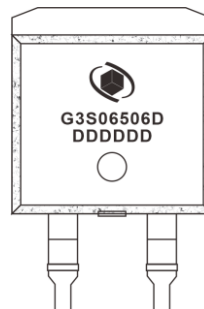
- SMPS, PFC
- Solar application, UPS, EV/HEV
- Motor drives, Wind turbine, Rail traction



**TO-263**



**Inner Circuit**



G = GPT  
3 = Gen3  
S = SiC Schottky Diode  
065 = Voltage Rating 650V  
06 = Current Rating 6A  
D = TO-263  
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 $T_c = 25^\circ\text{C}$ $T_c = 135^\circ\text{C}$ $T_c = 159^\circ\text{C}$	$I_F$	22.9 10.7 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	$\int i^2 dt$	22	$\text{A}^2\text{s}$
Power Dissipation $T_c = 25^\circ\text{C}$ $T_c = 110^\circ\text{C}$	$P_{tot}$	92 40	W
Operating Junction Range	$T_j$	-55 to +175	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +175	$^\circ\text{C}$

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

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	$\mu\text{A}$
		$T_J = 175^\circ\text{C}$	-	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	-	$\mu\text{J}$

**Thermal Characteristics**

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
Thermal Resistance, junction-case	$R_{th(j-c)}$		-	1.63	-	$^\circ\text{C/W}$



### Typical Characteristics Curves

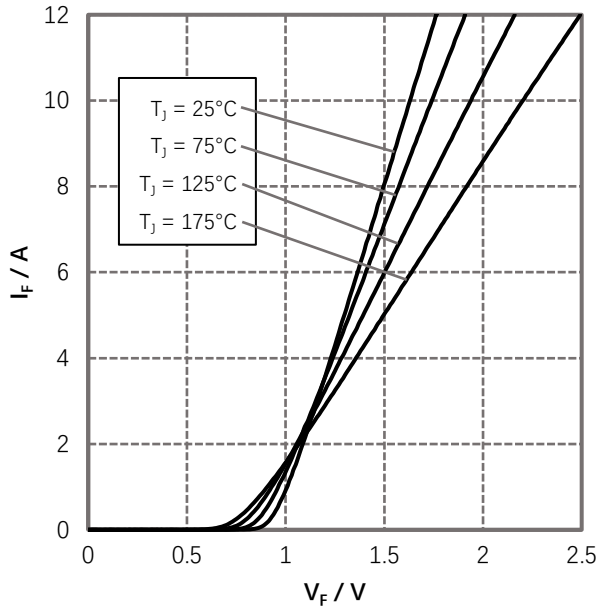


Figure 1. Forward Characteristics

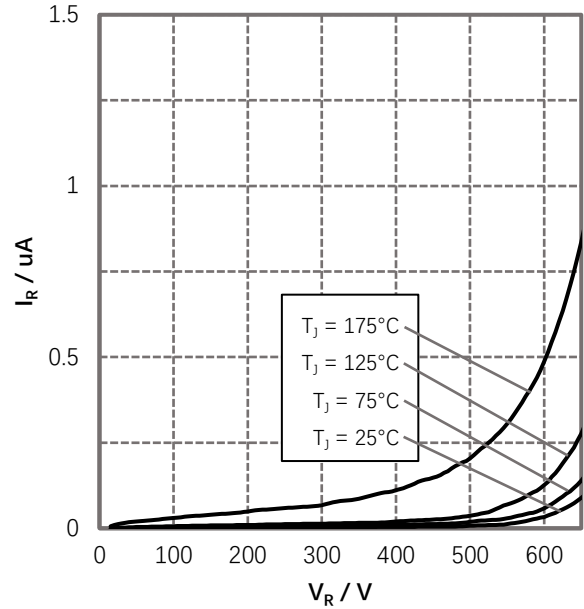


Figure 2. Reverse Characteristics

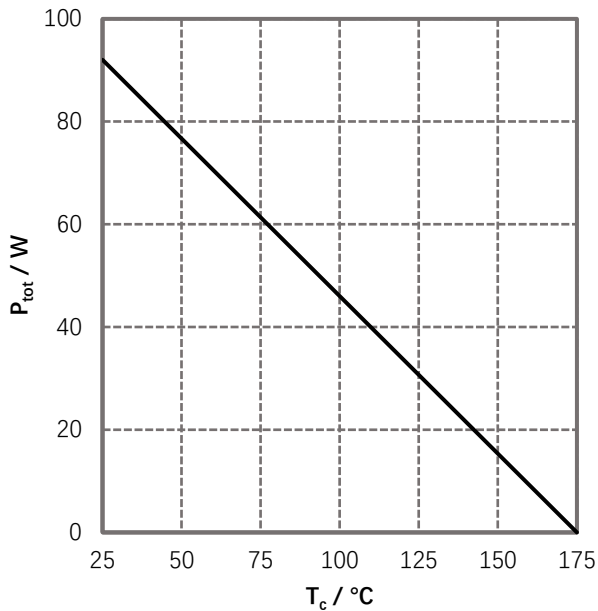


Figure 3. Power Derating

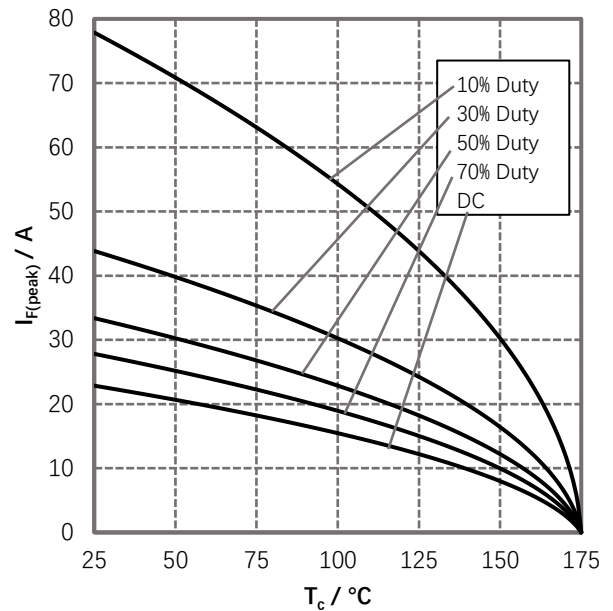


Figure 4. Current Derating



### Typical Characteristics Curves

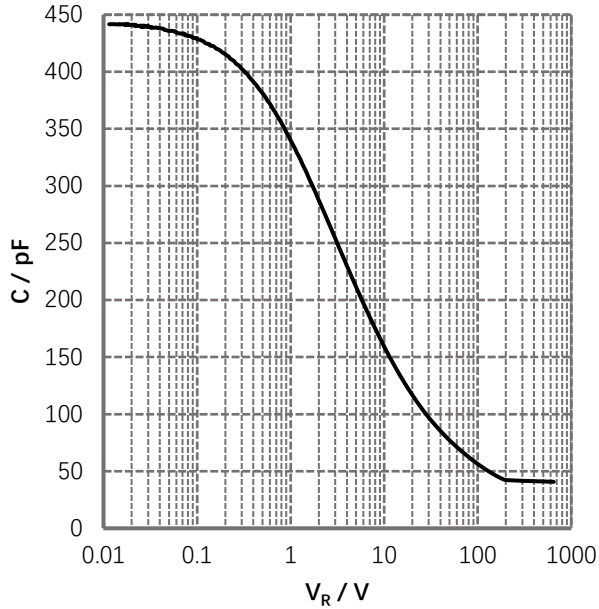


Figure 5. Capacitance vs. Reverse Voltage

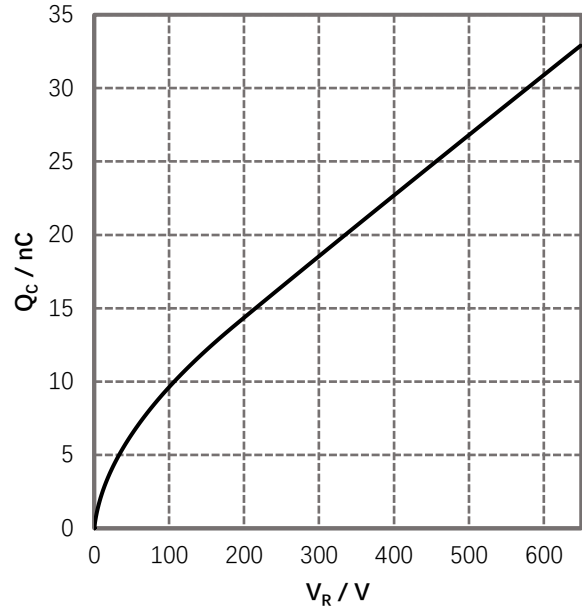


Figure 6. Reverse Charge vs. Reverse Voltage

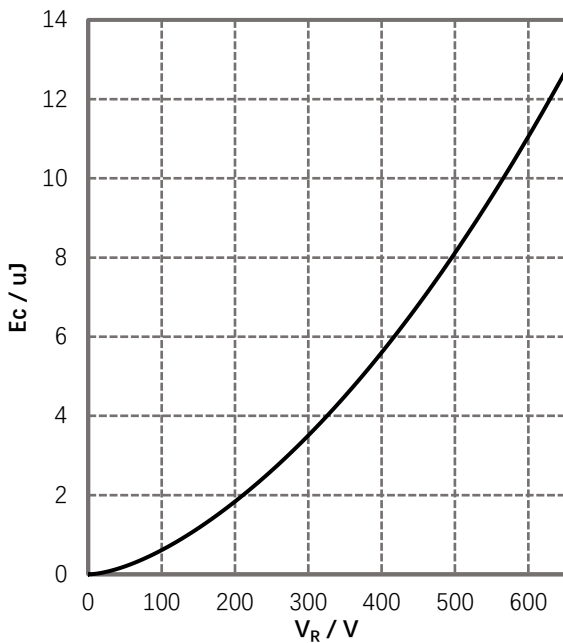


Figure 7. Capacitance Stored Energy

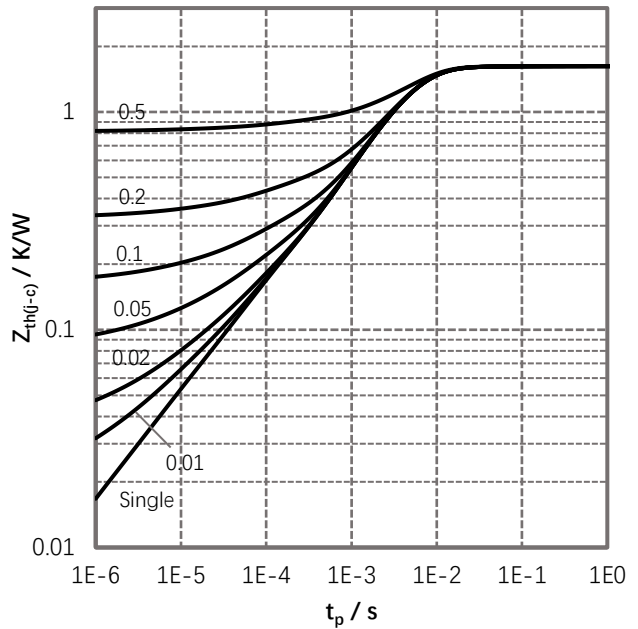
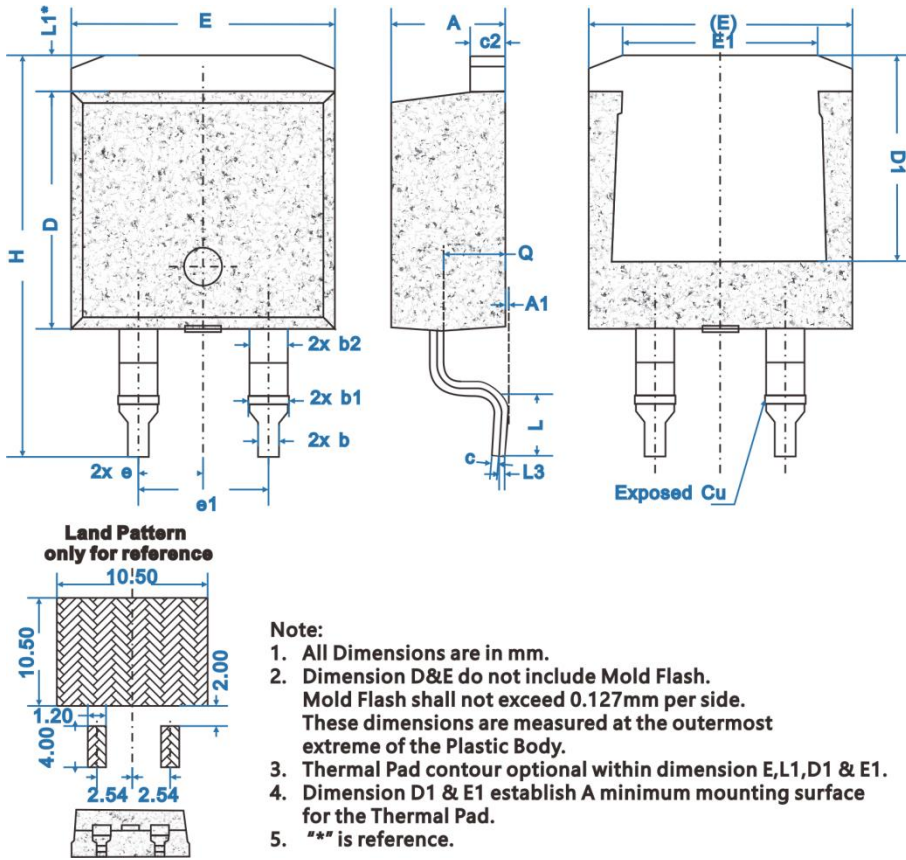


Figure 8. Transient Thermal Impedance



**Package Dimensions**



Unit: mm

Symbol	Dimensions		
	Min.	NOM.	Max.
A	4.24	4.44	4.64
A1	0.00	0.10	0.25
b	0.70	0.80	0.90
b1	1.20	1.55	1.75
b2	1.20	1.45	1.70
c	0.40	0.50	0.60
c2	1.15	1.27	1.40
D	8.82	8.92	9.02
D1	6.86	7.65	—
E	9.96	10.16	10.36
E1	6.89	7.77	7.89
e	2.54 BSC		
e1	5.08 BSC		
H	14.61	15.00	15.88
L	1.78	2.32	2.79
L1	1.36 Ref.		
L3	0.25 BSC		
Q	2.30	2.48	2.70

**Ordering Information**

Part Number	Marking	Package	Packaging Mode
G3S06506D	G3S06506D	TO-263	800/Reel

## Notes

- Global Power Technology reserves the right to change or modify any of the products and their inherent physical and technical specifications without prior notice.
- The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics.

## Related Links

- Global Power Technology Website: <http://www.globalpowertech.cn/>
- GPT online store is now open! you can place an order directly online, buy it easily, and send it directly from the factory! For more detailed product, price information and coupon activities, please log in to GPT online store: <http://sc.globalpowertech.cn/>

