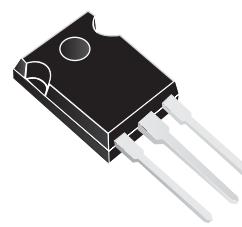


# CDBGBSC20650-G

**Reverse Voltage: 650V**

**Forward Current: 20A**

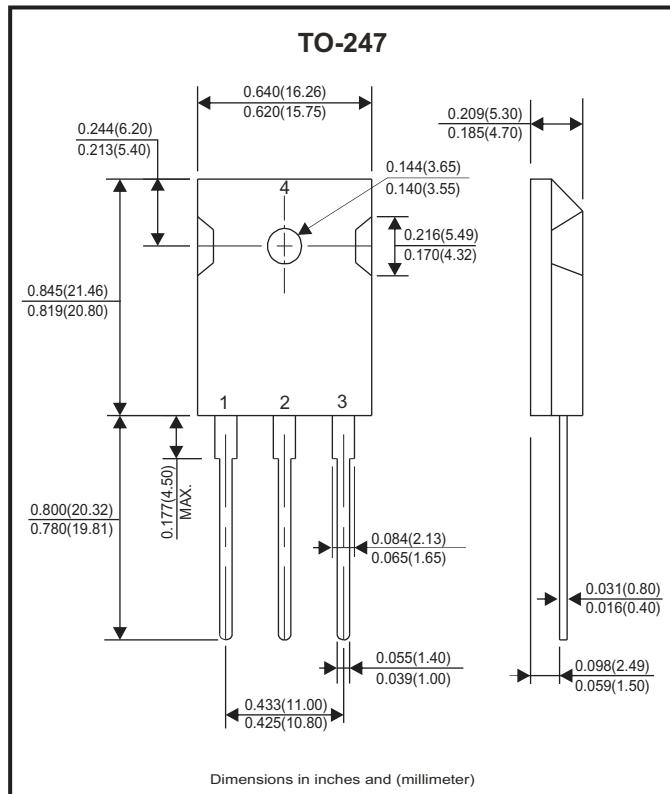
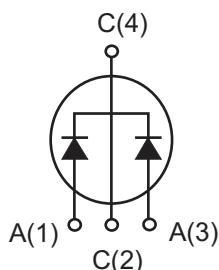
**RoHS Device**



## Features

- Rated to 650V at 20 Amps
- Short recovery time
- High speed switching possible
- High frequency operation.
- High temperature operation.
- Temperature independent switching behaviour.
- Positive temperature coefficient on VF

## Circuit diagram



## Maximum Ratings (at $T_A=25^\circ\text{C}$ , unless otherwise noted)

Parameter	Conditions	Symbol	Value	Unit
Repetitive peak reverse voltage		$V_{RRM}$	650	V
Surge peak reverse voltage		$V_{RSM}$	650	V
DC blocking voltage		$V_{DC}$	650	V
Continuous forward current	$T_c = 25^\circ\text{C}$ (Per leg) $T_c = 135^\circ\text{C}$ (Per leg) $T_c = 155^\circ\text{C}$ (Per leg)	$I_F$	33 15 10	A
Repetitive peak forward surge current	$T_c = 25^\circ\text{C}$ , $t_p = 10\text{ms}$ Half sine wave, $D = 0.3$ (Per leg)	$I_{FRM}$	50	A
Non-repetitive peak forward surge current	$T_c = 25^\circ\text{C}$ , $t_p = 10\text{ms}$ Half sine wave (Per leg)	$I_{FSM}$	100	A
Power dissipation	$T_c = 25^\circ\text{C}$ (Per leg) $T_c = 110^\circ\text{C}$ (Per leg)	$P_{TOT}$	109 48	W
Typical thermal resistance from junction to case	Per leg Per diode	$R_{\theta JC}$	1.37 0.69	°C/W
Operating junction temperature range		$T_J$	-55 ~ +175	°C
Storage temperature range		$T_{STG}$	-55 ~ +175	°C

Company reserves the right to improve product design , functions and reliability without notice.

## Electrical Characteristics (at $T_A=25^\circ\text{C}$ , unless otherwise noted)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Forward voltage	$I_F = 10\text{A}, T_j = 25^\circ\text{C}$	$V_F$		1.5	1.7	V
	$I_F = 10\text{A}, T_j = 175^\circ\text{C}$			1.7	2.5	
Reverse current	$V_R = 650\text{V}, T_j = 25^\circ\text{C}$	$I_R$		20	100	$\mu\text{A}$
	$V_R = 650\text{V}, T_j = 175^\circ\text{C}$			30	200	
Total capacitive charge	$V_R = 400\text{V}, T_j = 150^\circ\text{C}$ $Q_C = \int_0^{V_R} C(V) dV$	$Q_C$		36	-	nC
Total capacitance	$V_R = 0\text{V}, T_j = 25^\circ\text{C}, f = 1\text{MHz}$	$C$		690	730	$\text{pF}$
	$V_R = 200\text{V}, T_j = 25^\circ\text{C}, f = 1\text{MHz}$			72	75	
	$V_R = 400\text{V}, T_j = 25^\circ\text{C}, f = 1\text{MHz}$			71	74	

## RATING AND CHARACTERISTIC CURVES (CDBGBC20650-G)

Per Leg:

Fig.1 - Forward IV Characteristics as a Function of  $T_j$ :

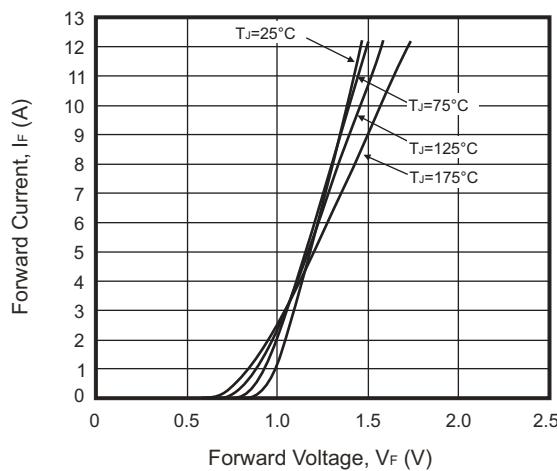


Fig.2 - Reverse IV Characteristics as a Function of  $T_j$ :

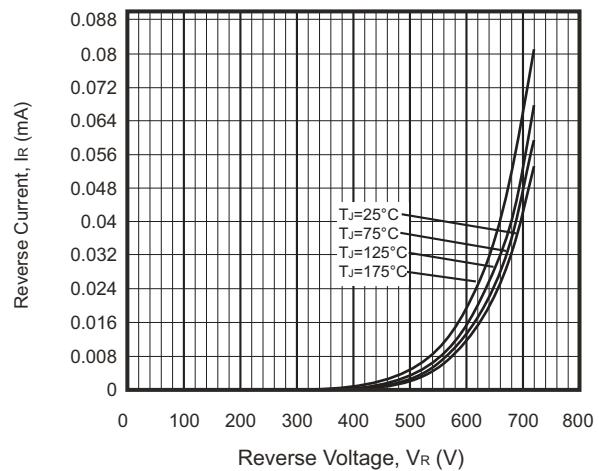


Fig.3 - Current Derating

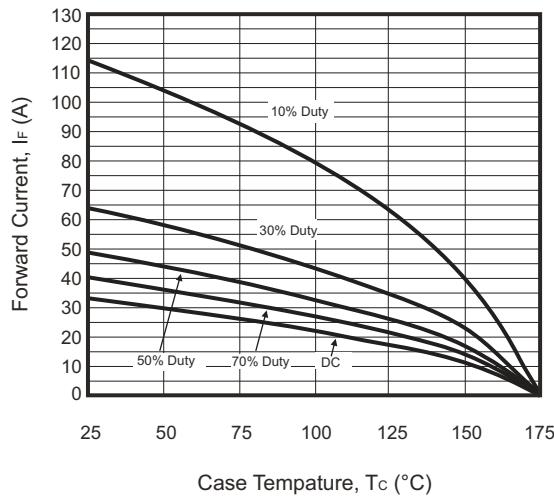


Fig.4 - Capacitance VS. Reverse Voltage

