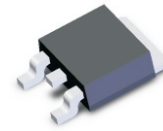


## CDBDSC6650-G

Reverse Voltage: 650 V

Forward Current: 6 A

RoHS Device

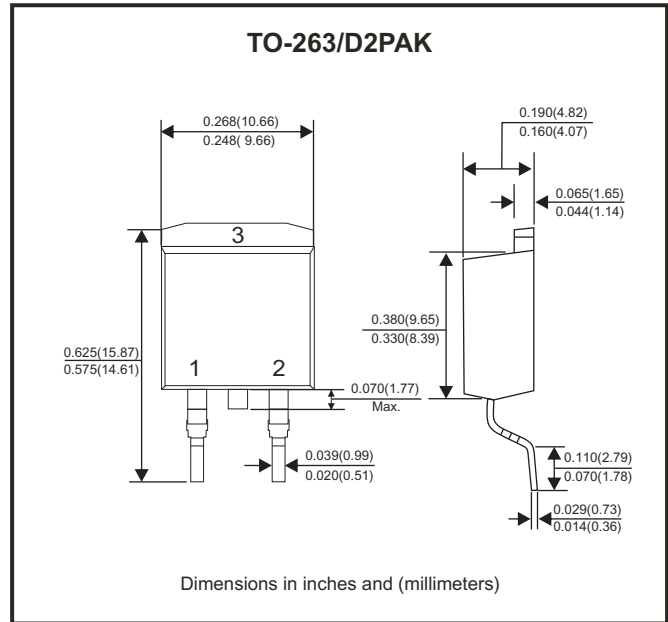


### Features

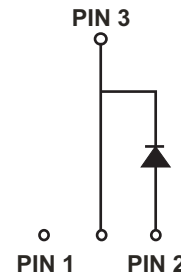
- Rated to 650V at 6 Amps
- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behaviour.
- High temperature operation.
- High frequency operation.

### Mechanical data

- Case: TO-263/D2PAK, molded plastic.
- Terminals: Solderable per MIL-STD-750, method 2026.



### Circuit Diagram



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

Parameter	Conditions	Symbol	Limit	Unit
Repetitive peak reverse voltage	$T_j = 25^{\circ}\text{C}$	$V_{RRM}$	650	V
Surge peak reverse voltage	$T_j = 25^{\circ}\text{C}$	$V_{RSM}$	650	V
DC blocking voltage	$T_j = 25^{\circ}\text{C}$	$V_{DC}$	650	V
Continuous forward current	$T_c = 25^{\circ}\text{C}$	$I_F$	21.5	A
	$T_c = 135^{\circ}\text{C}$		10	
	$T_c = 158^{\circ}\text{C}$		6	
Repetitive peak forward surge current	$T_c = 25^{\circ}\text{C}$ , $t_p = 10\text{ms}$ Half sine wave, $D = 0.3$	$I_{FRM}$	30	A
Non-repetitive peak forward surge current	$T_c = 25^{\circ}\text{C}$ , $t_p = 10\text{ms}$ Half sine wave	$I_{FSM}$	42	A
Power dissipation	$T_c = 25^{\circ}\text{C}$	$P_{TOT}$	85.8	W
	$T_c = 110^{\circ}\text{C}$		39	
Typical thermal resistance	Junction to case	$R_{\theta JC}$	1.748	$^{\circ}\text{C}/\text{W}$
Operating junction temperature range		$T_j$	-55 ~ +175	$^{\circ}\text{C}$
Storage temperature range		$T_{STG}$	-55 ~ +175	$^{\circ}\text{C}$

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

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Forward voltage	$I_F = 6\text{A}, T_j = 25^\circ\text{C}$	$V_F$		1.44	1.8	V
	$I_F = 6\text{A}, T_j = 175^\circ\text{C}$			1.73	2.5	
Reverse current	$V_R = 650\text{V}, T_j = 25^\circ\text{C}$	$I_R$		10	100	$\mu\text{A}$
	$V_R = 650\text{V}, T_j = 175^\circ\text{C}$			15	200	
Total capacitive charge	$V_R = 400\text{V}, T_j = 150^\circ\text{C}$ $Q_C = \int_0^{V_R} C(V) dv$	$Q_C$		23		nC
Total capacitance	$V_R = 0\text{V}, T_j = 25^\circ\text{C}, f = 1\text{MHz}$	C		424	434	pF
	$V_R = 200\text{V}, T_j = 25^\circ\text{C}, f = 1\text{MHz}$			44	45	
	$V_R = 400\text{V}, T_j = 25^\circ\text{C}, f = 1\text{MHz}$			42.5	43	

## RATING AND CHARACTERISTIC CURVES (CDBDSC6650-G)

Fig.1 - Forward Characteristics

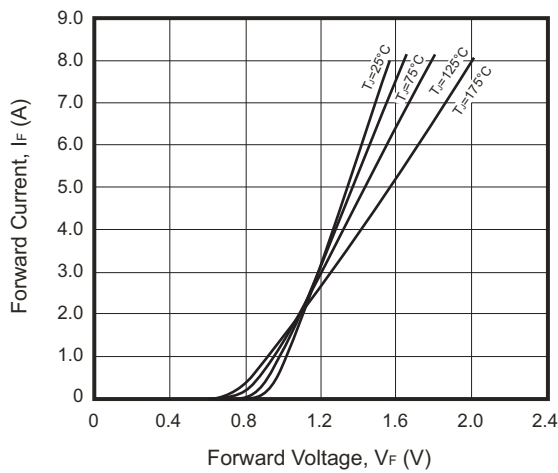


Fig.2 - Reverse Characteristics

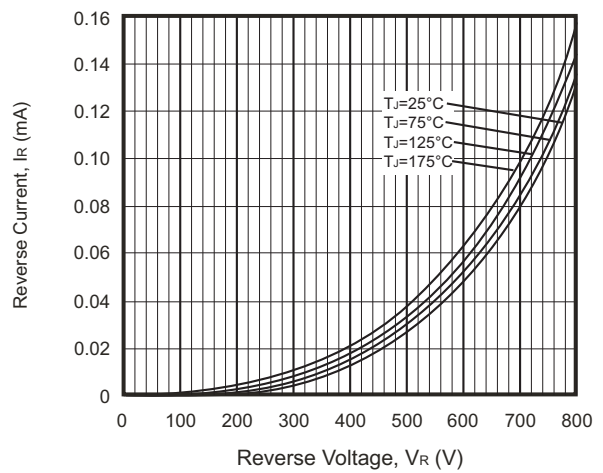


Fig.3 - Current Derating

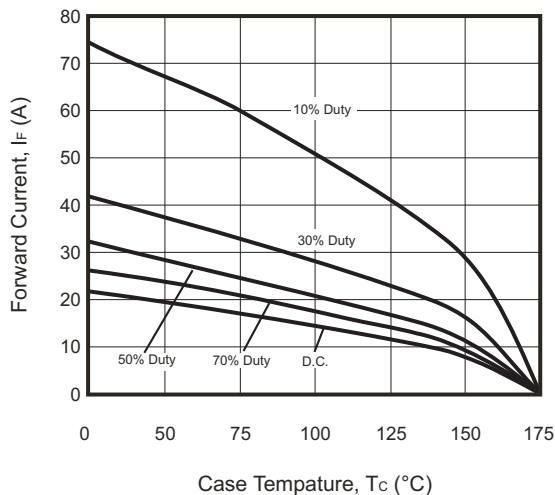
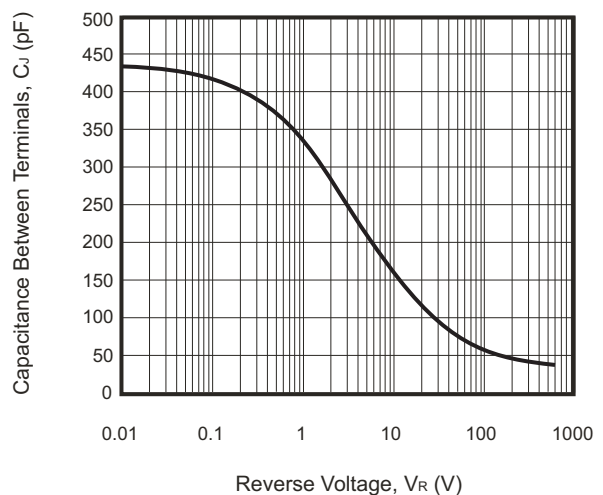
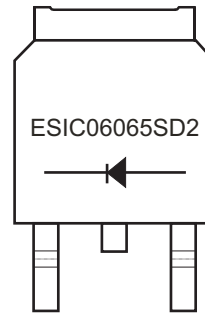


Fig.4 - Capacitance Characteristics



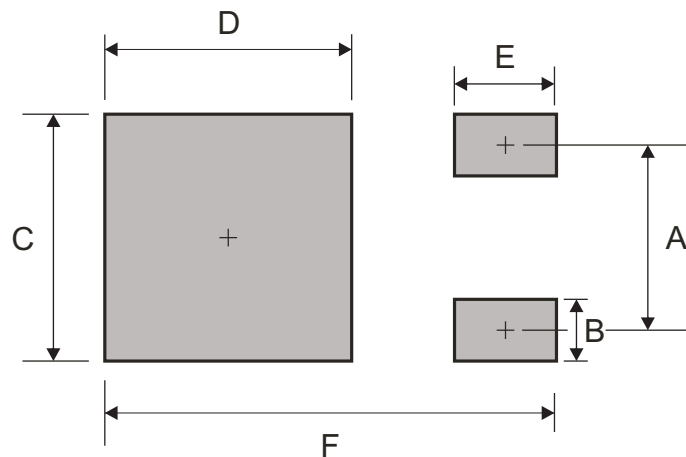
## Marking Code

Part Number	Marking Code
CDBDSC6650-G	ESIC06065SD2



## Suggested PAD Layout

SIZE	TO-263 / D2PAK	
	(mm)	(inch)
A	5.08	0.200
B	1.10	0.043
C	10.80	0.425
D	8.30	0.327
E	3.50	0.138
F	16.90	0.666



## Standard Packaging

Case Type	TUBE PACK	
	TUBE (pcs)	CARTON (pcs)
TO-263 / D2PAK	50	4,000