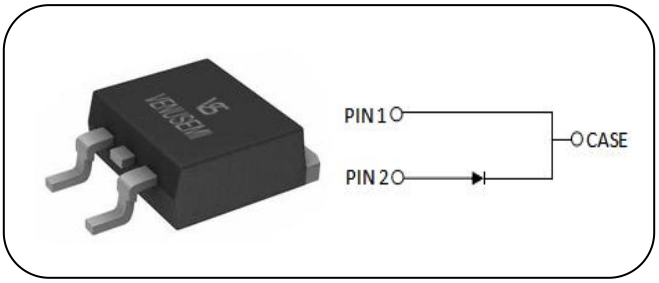
VSDB3065T3

VENUSEMI
VENUS SEMICONDUCTOR

Features

- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Positive Temperature Coefficient on V_F
- Temperature-independent Switching
- 175°C Operating Junction Temperature



Applications

- Switch Mode Power Supplies
- Power Factor Correction
- Motor drive, PV Inverter, Wind Power Station

Benefits

- Replace Bipolar with Unipolar Device
- Reduction of Heat Sink Size
- Parallel Devices Without Thermal Runaway
- Essentially No Switching Losses

Key Performance Parameters

V_{RRM}	650V
I_F(T_C ≤140°C)	30A
Q_C	73nC
$T_{vj,max}$	175°C

RoHS

Package Marking and Ordering Information

Item	Sales Type	Marking	Package	Packaging
1	VSDB3065T3	VSDB3065T3	TO-263-2	TUBE

Absolute maximum ratings

Symbol	Parameter	Value	Unit	Note
V_{RRM}	Repetitive peak reverse voltage ,T_C = 25°C	650	V	
V_{RSM}	Surge Peak Reverse Voltage ,T_C = 25°C	650	V	
V_R	DC Blocking Voltage ,T_C = 25°C	650	V	
I_F	Forward current ,T_C ≤135°C	32	A	
	Forward current ,T_C ≤140°C	30		
I_{FSM}	Non-Repetitive Forward Surge Current , half sine wave,T_C = 25°C, t_p = 8.3ms	210	A	
P_{tot}	Power Dissipation ,T_C = 25°C	220	W	Fig.3
T_C	Maximum Case Temperature	140	°C	
T_{STG}, T_J	Operating junction temperature & storage temperature	-55 ~ + 175	°C	

Thermal characteristics

Symbol	Parameter	Value			Unit	Note
		min.	typ.	max.		
$R_{\theta JC}$	Thermal Resistance from Junction to Case		0.67		°C/W	Fig.6

Electrical characteristic

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit	Note
Static characteristics							
V_F	Forward voltage	I_F = 30A, T_J = 25°C	-	1.52	1.78	V	Fig.1
		I_F = 30A, T_J = 175°C	-	1.76	2.28	V	
I_R	Reverse current	V_R=650V, T_J = 25°C	-	2	20	uA	Fig.2
		V_R=650V, T_J = 175°C	-	15	200	uA	
Dynamic characteristics							
C	Total Capacitance	V_R=0V, T_J = 25°C, f=1MHz	-	1802	-	pF	Fig.5
		V_R=200V, T_J = 25°C, f=1MHz	-	175	-	pF	
		V_R=400V, T_J = 25°C, f=1MHz	-	146	-	pF	
Q_C	Total capacitive charge	V_R=650V, T_J = 25°C I_F = 30A, di/dt=200A/μs	-	73	-	nC	Fig.4

Electrical Characteristics Diagrams

Fig. 1. Typical forward characteristics

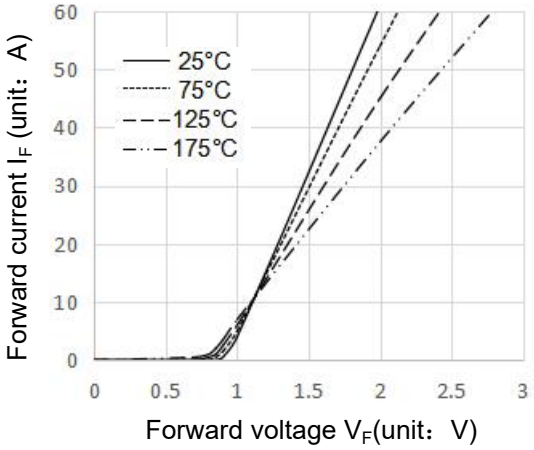


Fig. 2. Typical reverse characteristic

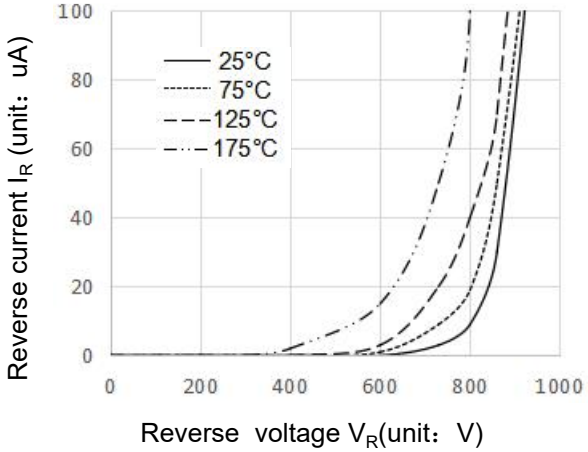


Fig. 3. Power Derating

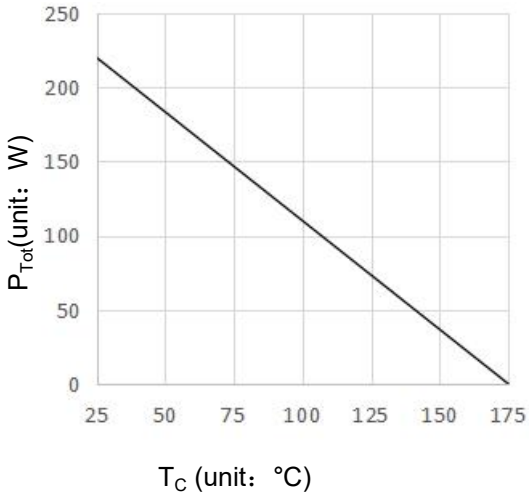


Fig. 4. Total Capacitive Charge vs. Reverse Voltage

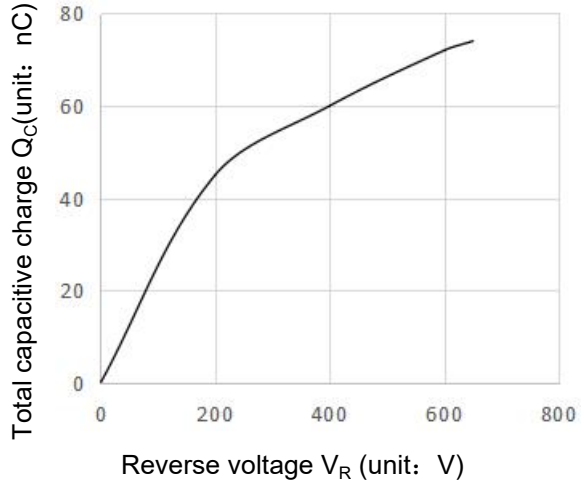


Fig. 5. Total Capacitance vs. Reverse Voltage

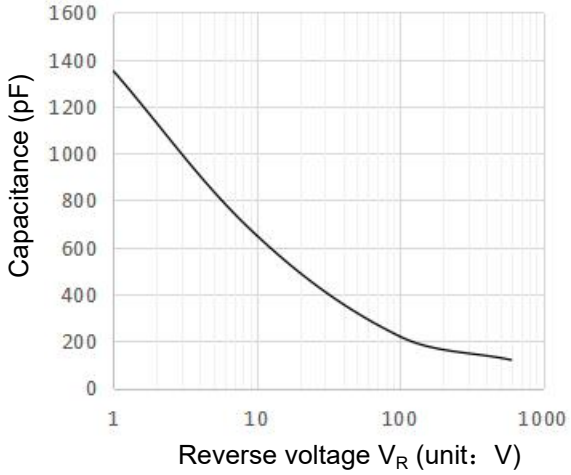
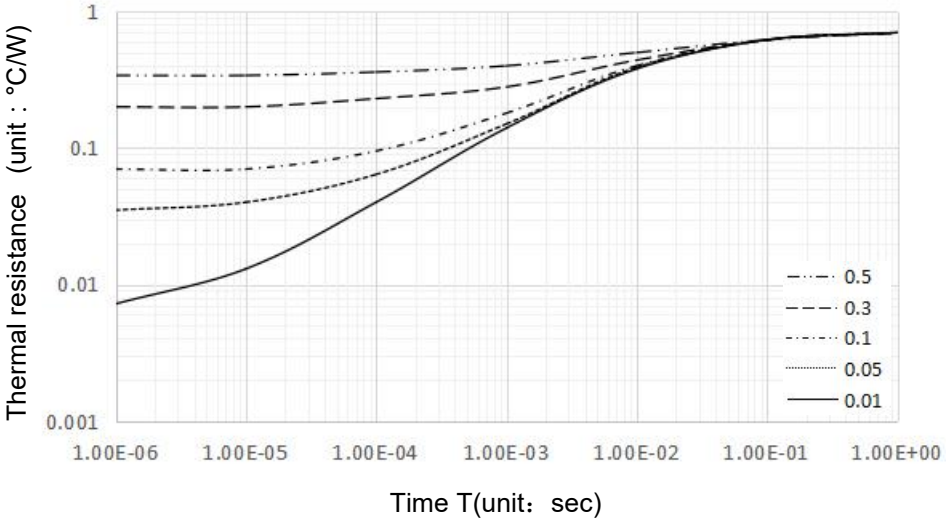
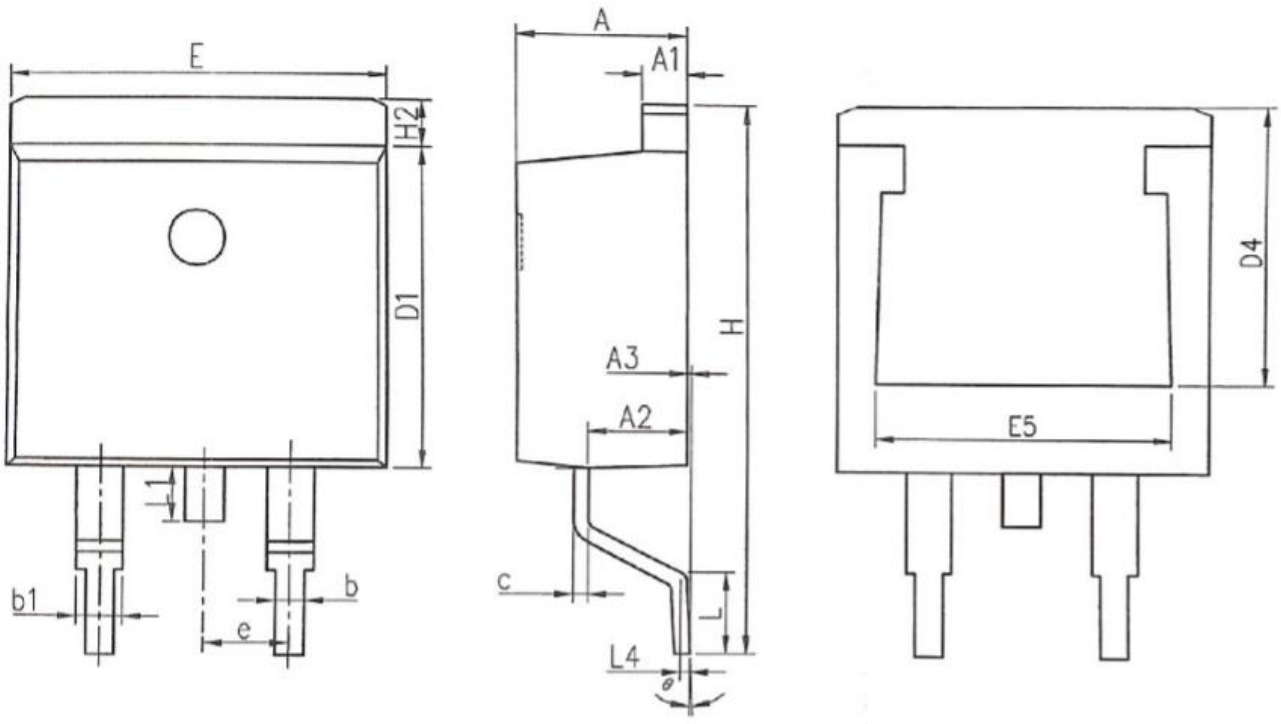


Fig. 6. Transient thermal response curve



Package Drawing

TO-263-2



SYMBOL.	mm			SYMBOL.	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.37	4.57	4.77	E	9.86	10.16	10.36
A1	1.22	1.27	1.42	E5	7.06	-	-
A2	2.49	2.69	2.89	e	2.54 BSC		
A3	0.00	0.13	0.25	H	14.70	15.10	15.50
b	0.70	0.81	0.96	H2	1.07	1.27	1.47
b1	1.17	1.27	1.47	L	2.00	2.30	2.60
c	0.30	0.38	0.53	L1	1.40	1.55	1.70
D1	8.50	8.70	8.90	L4	0.25 BSC		
D4	6.60	-	-	θ	0°	5°	9°