



650V/1A Silicon Carbide Power Schottky Barrier Diode

Features

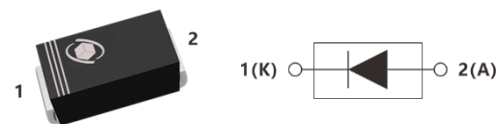
- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behavior
- High temperature operation
- High frequency operation

Key Characteristics

V_{RRM}	650	V
$I_F (T_C \leq 132^\circ\text{C})$	1	A
Q_c	3.6	nC

Benefits

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



Applications

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



Part No.	Package Type	Marking
G51YT	SMA	G51YT

Maximum Ratings

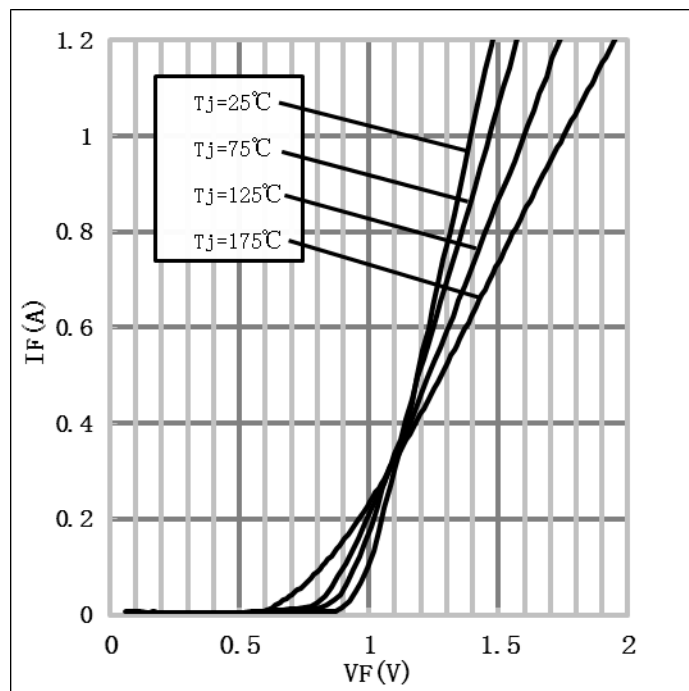
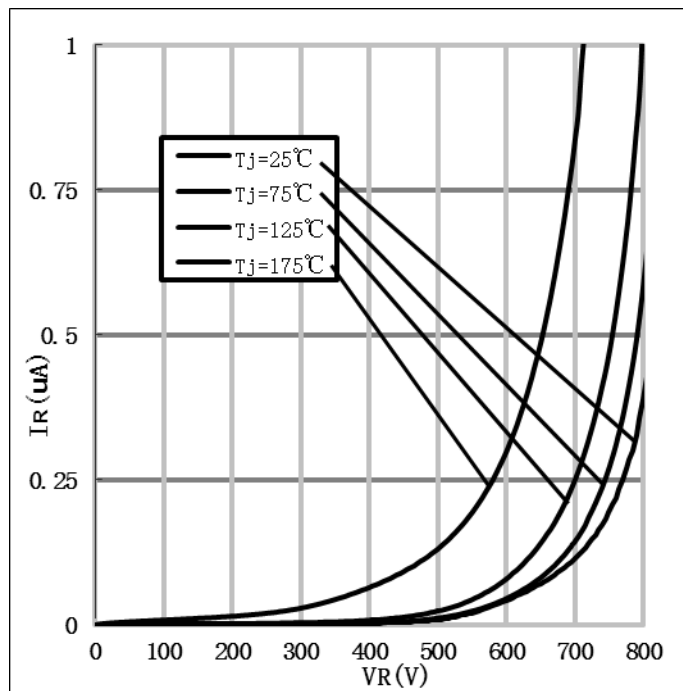
Parameter	Symbol	Test Condition	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}		650	V
Surge Peak Reverse Voltage	V_{RSM}		650	
DC Blocking Voltage	V_{DC}		650	
Continuous Forward Current	I_F	$T_C=25^{\circ}\text{C}$ $T_C=125^{\circ}\text{C}$ $T_C=132^{\circ}\text{C}$	2.62 1.38 1	A
Repetitive Peak Forward Surge Current	I_{FRM}	$T_C=25^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Wave, $D=0.3$	5	A
Non-repetitive Peak Forward Surge Current	I_{FSM}	$T_C=25^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Wave	10	A
Power Dissipation	P_{TOT}	$T_C=25^{\circ}\text{C}$	8.8	W
		$T_C=110^{\circ}\text{C}$	3.8	
Operating Junction	T_j		-55°C to 175°C	$^{\circ}\text{C}$
Storage Temperature	T_{stg}		-55°C to 175°C	

Thermal Characteristics

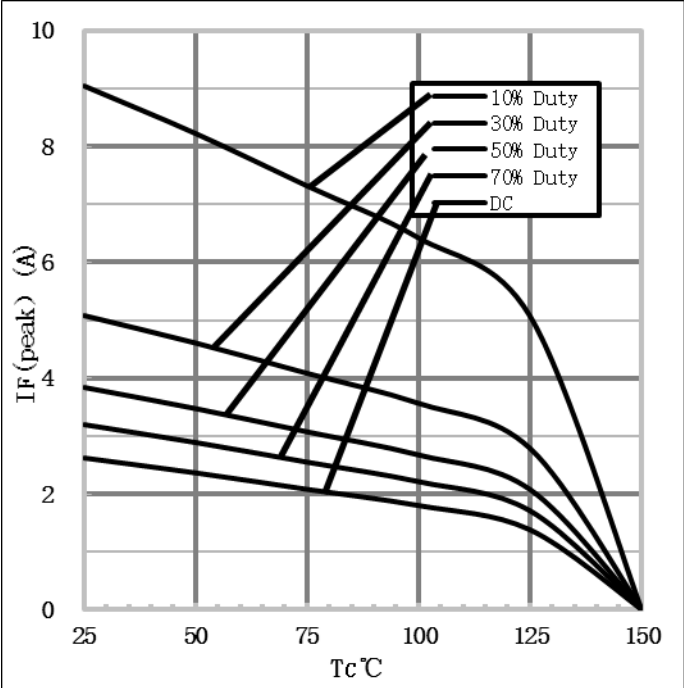
Parameter	Symbol	Test Condition	Value (typ.)	Unit
Thermal resistance from junction to case	$R_{th\text{ JC}}$		17	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics

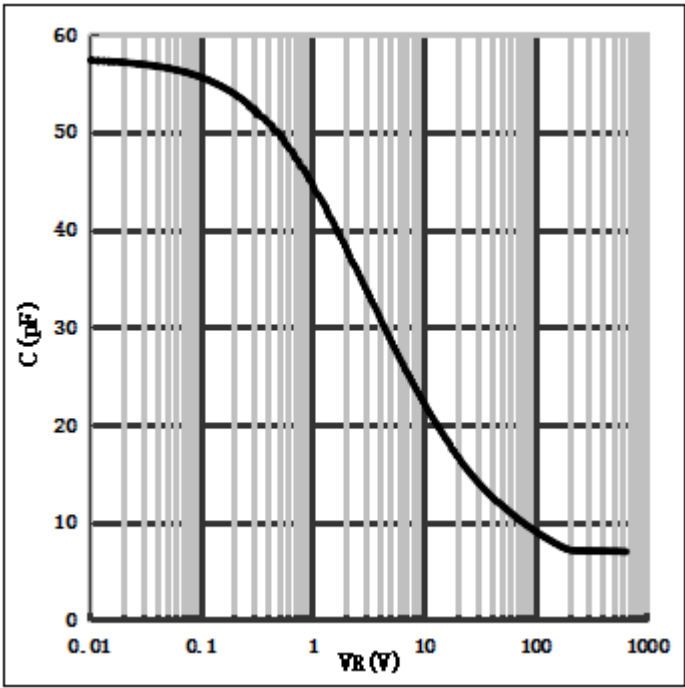
Parameter	Symbol	Test Conditions	Value		Unit
			Typ.	Max.	
Forward Voltage	V_F	$I_F=1A, T_j=25^{\circ}C$	1.38	1.6	V
		$I_F=1A, T_j=175^{\circ}C$	1.73	2	
Reverse Current	I_R	$V_R=650V, T_j=25^{\circ}C$	0.07	50	μA
		$V_R=650V, T_j=175^{\circ}C$	0.5	100	
Total Capacitive Charge	Q_C	$V_R=400V, T_j=150^{\circ}C$ $Q_C = \int_0^{V_R} C(V)dV$	3.6	-	nC
Total Capacitance	C	$V_R=0V, T_j=25^{\circ}C, f=1MHz$	57.5	60	pF
		$V_R=200V, T_j=25^{\circ}C, f=1MHz$	7.18	10	
		$V_R=400V, T_j=25^{\circ}C, f=1MHz$	7	8	

Performance Graphs1) Forward IV characteristics as a function of T_j 2) Reverse IV characteristics as a function of T_j 

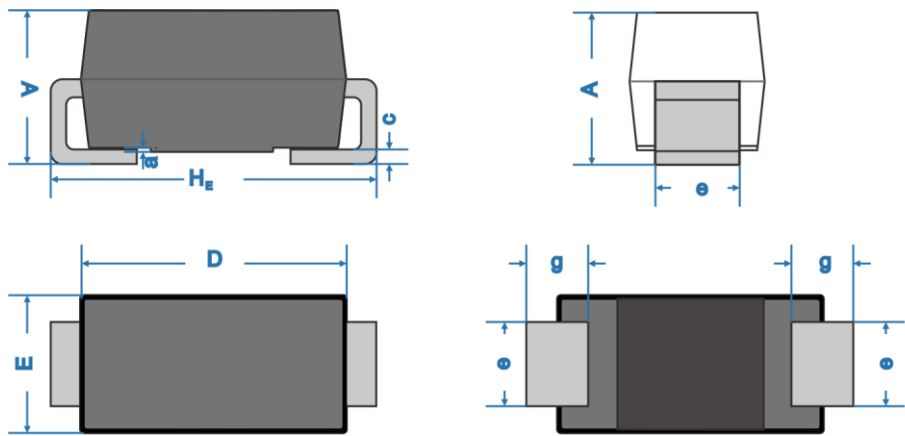
3) Current Derating



4) Capacitance vs. reverse voltage



Package SMA



Unit		A	D	E	H _E	c	e	g	a
mm	Max.	2.2	4.5	2.7	5.2	0.31	1.6	1.5	0.3
	Min.	1.9	4	2.3	4.7	0.15	1.3	0.9	
mil	Max.	87	181	106	205	12	63	59	12
	Min.	75	157	91	185	6	51	35	

Notes

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