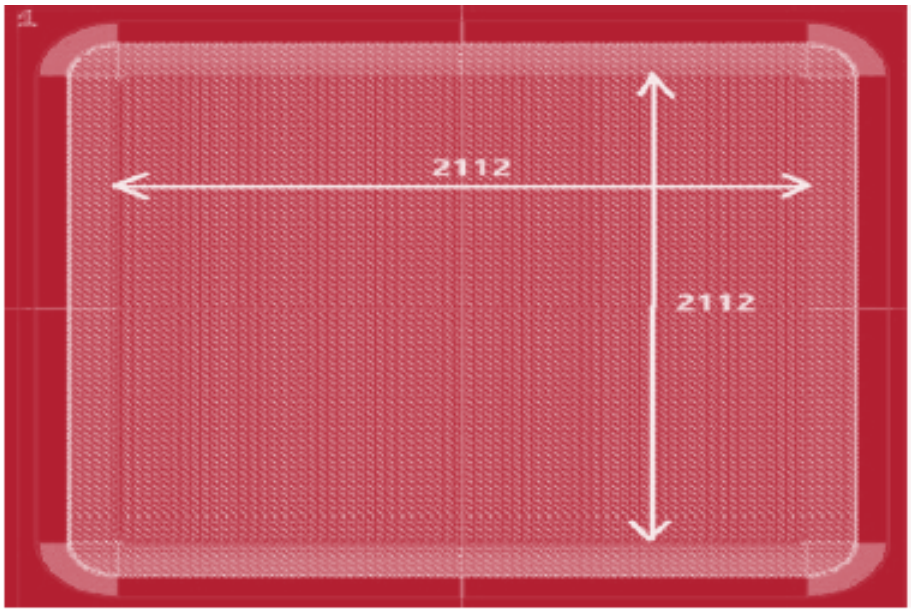
Features

- Zero Forward Recovery Voltage
- Zero Reverse Recovery Current
- Excellent Surge Current Capability
- Temperature Independent Switching
- Positive Temperature Coefficient on V_F
- High Frequency Operation

Part NO.		MSD080CS300B
V_{RRM}	=	300 V
$I_{F(AVG)}$	=	80 A
Q_C	=	95 nC

Wafer Parameters

Parameter	Typ.	Unit
Die Size	4000 x 2500	μm
Anode Pad Opening	3800 x 2100	μm
Wafer Diameter	150	mm
Thickness	150±10	μm
Anode Metalization (Al)	4	μm
Cathode Metalization (Ti/Ni/Ag)	0.1/0.4/1	μm
Grossdie	1600	



Maximum ratings

Symbol	Parameter	Test conditions	Value	Unit
V_{RRM}	Repetitive peak reverse voltage		300	V
$I_{F(AVG)}$	Average forward current	T_c=145°C	80*	A
I_{FSM}	Non-Repetitive forward surge current	T_c=25°C, t_p=10ms, Half Sine Wave	400	A
P_{tot}	Power dissipation	T_c=25°C T_c=110°C	600* 320*	W
T_j	Operating junction temperature		-55~175	°C
T_{stg}	Storage temperature		-55~175	°C

* Assumes thermal resistance of 0.328°C/W or less

Electrical Characteristics

Static Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
V_{DC}	DC blocking voltage	T_j=25°C		300		V
V_F	Diode forward voltage	I_F=40A T_j=25°C I_F=40A T_j=175°C		1.25 1.45		V
I_R	Reverse current	V_R=300V T_j=25°C V_R=300V T_j=175°C		0.5 10		μA

AC Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
Q_C	Total capactive charge	V_R=240V T_j=25°C $Q_C = \int_0^{V_R} C(V)dV$		100		nC
C	Total capacitance	V_R=1V f=1MHz V_R=150V f=1MHz V_R=300V f=1MHz		1200 120 50		pF
E_C	Capacitance stored energy	V_R=240V		13		μJ

Typical Performance

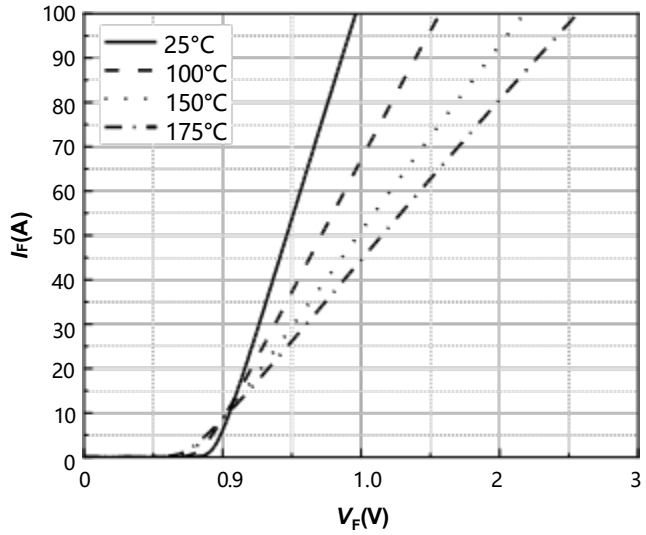


Figure 1. **Typical forward characteristics**

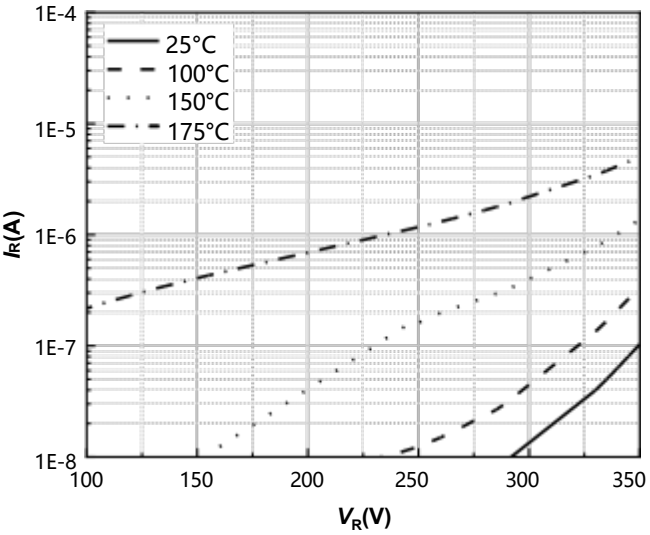


Figure 2. **Typical reverse current as function of reverse voltage**

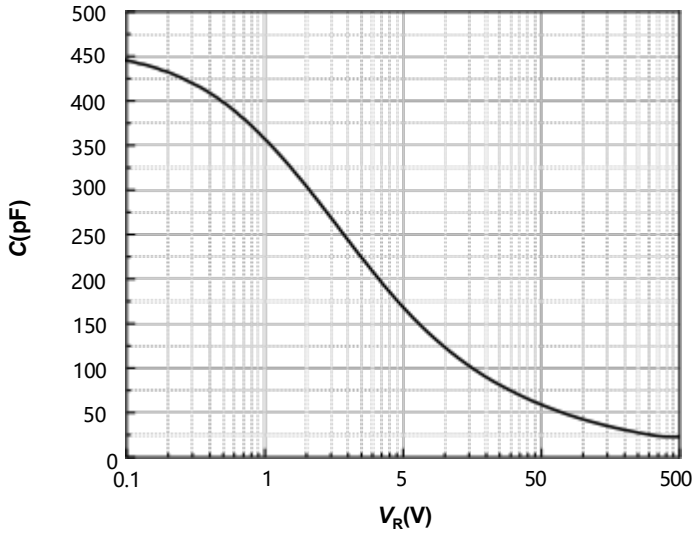


Figure 3**. Typical capacitance as function of reverse voltage, C=f(V_R); T_j=25。C; f=1 MHz**

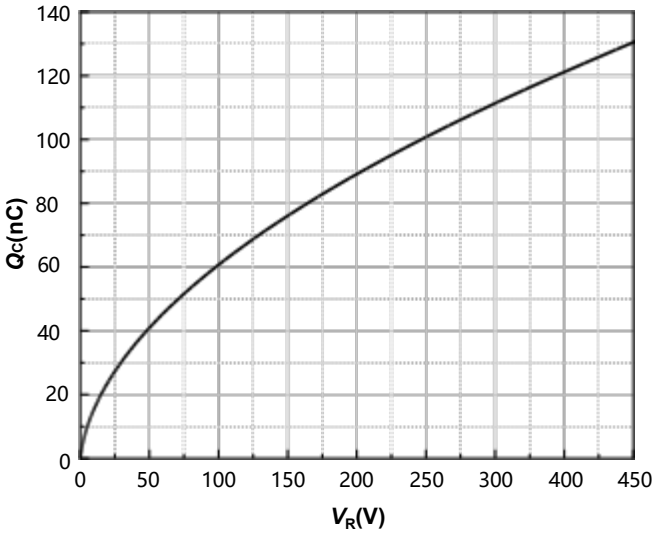


Figure 4**. Typical reverse charge as function of reverse voltage**