MSD060CS1K2B

1200V/40A SiC SBD die

Features

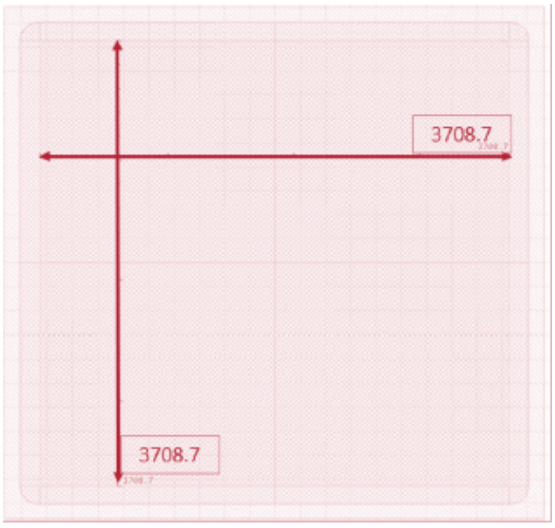
- Zero Forward Recovery Voltage
- Zero Reverse Recovery Current
- Excellent Surge Current Capability
- Temperature Independent Switching
- Positive Temperature Coefficient on V_F
- High Frequency Operation

Part NO.		MSD060CS1K2B
V_{RRM}	=	1200 V
$I_{F(AVG)}$	=	40 A
Q_C	=	225 nC

Wafer Parameters

Parameter	Typ.	Unit
Die Size(with SL)	4350 x 4350	μm
Scribe Line	80	μm
Anode Pad Opening	3708.7 x 3708.7	μm
Wafer Diameter	150	mm
Thickness	150±10	μm
Anode Metalization (Al)	4	μm
Cathode Metalization (Ti/Ni/Ag)	0.1/0.5/1	μm
Grossdie	759	pcs

Chip Drawing



Maximum ratings

Symbol	Parameter	Test conditions	Value	Unit
V_{RRM}	Repetitive peak reverse voltage		1200	V
$I_{F(AVG)}$	Average forward current	T_C=145°C	40*	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	500* 460*	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		1200		V
V_F	Diode forward voltage	I_F=40A T_j=25°C I_F=40A T_j=175°C		1.3 1.6		V
I_R	Reverse current	V_R=1200V T_j=25°C V_R=1200V 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=960V T_j=25°C $Q_C = \int_0^{V_R} C(V)dV$		225		nC
C	Total capacitance	V_R=1V f=1MHz V_R=960V f=1MHz V_R=1200Vf=1MHz		1800 430 150		pF
E_C	Capacitance stored energy	V_R=960V		185		μJ