CE Semiconductors

Ultrafast Rectifier Module , 240A

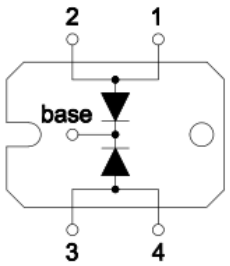
Features

- Two fully independent diodes
- Fully insulated package
- Ultrafast ,soft reverse recovery,with high operation junction temperature (150℃ T_j)
- Lo forward voltage drop
- Optimized for power conversion:welding and industrial SMPS applications
- Easy to use and parallel
- Industry standard outline
- Designed and qualified for industrial level

I_{FAV}=2×120A

V_{RRM}=600 V

t_{rr}=90nS



KM

Description

The CKMU240-06 insulated modules integrate two state of the art ultrafast recovery rectifiers in the compact, industry standard SOT-227 package. The diodes structure, and its life time control, provide an ultrasoft recovery current shape, together with the best overall performance, ruggedness and reliability characteristics.

These devices are thus intended for high frequency applications in which the switching energy is designed not to be predominant portion of the total energy, such as in th output rectification stage of welding machines, SMPS, DC/DC converters. Their extremely optimized stored charge and low recovery current reduce both over dissipation in the switching elements (and snubbers) and EMI/RFI.

Absolute Maximum Ratings				
Parameters	**Symbol**	**Test Conditions**	**Max**	**Unit**
Cathode to anode voltage	V_R		600	V
Continuous forward current per diode	I_F	T_C=80˚C	120	A
Single pulse forward current per diode	I_{FSM}	T_C=25˚C	2000	A
Maximum power dissipation per module	P_D	T_C=90˚C	620	W
RMS isolation voltage	Visol	Ac.50H_Z；R.M.S；1min	2500	V
		Ac.50H_Z；R.M.S；1sec	3000	V
Maximum junction temperature	T_J		-55~+150	˚C
Maximum case temperature	T_J		150	
Storage temperture	Tstg		-55~+150	

Electrical Specifications

Parameters	Symbol	Test Conditions	Values			Units
			Min.	Typ.	Max.	
Cathode to anode breakdown voltage	V_{BR}	I_R=100μA	600	—	—	V
Forward voltage	V_{FM}	I_F=120 A T_J=25˚C	—	—	1.8	
		I_F=120A T_J=125˚C	—	—	1.5	
Reverse leakage current	I_{RM}	V_R=V_R rated T_J=25˚C	—	—	100	uA
		V_R=V_R rated T_J=125˚C	—	—	5	mA

Dynamic Recovery Characteristics (T_J=25˚C unless otherwise specified)

Parameters	Symbol	Test Conditions	Max	Unit
Reverse recovery time	t_{rr}	I_F=0.5A, I_R=1A, I_{RR}=0.25A	90	nS
Peak recovery current	I_{RRM}	I_F=400A,dI_F/dt=200A/μS,V_R=100V	7.7	A

Thermal - Mechanical Specifications

Parameters	Symbol	Test Conditions	Values			Units
			Min.	Typ.	Max.	
Junction to case ,single leg conducting	R_{thjc}		—	—	0.6	˚C/W
Junction to case ,both leg conducting			—	—	0. 3	
Case to heatsink	R_{thcs}	Flat,greased surface	—	0.15	—	
Mounting Torque	Mt	Mounting torque(M4)	1.1		1.5	Nm
	Ms	Terminal connection torque(M4)	1.1		1.5	
Module(Approximately)	Weight			30		g

Performance Curves

Fig. 1 Forward current I_F versus V_F

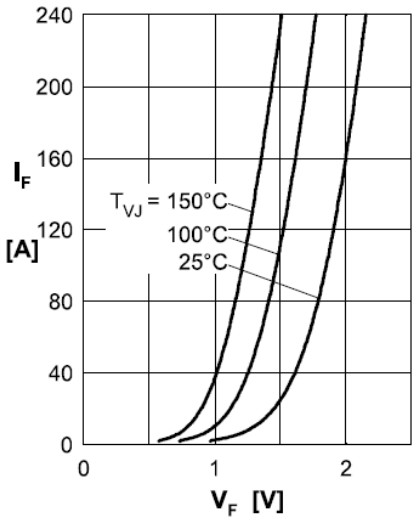


Fig. 2 Reverse recovery charge Q_r versus $-dI_F/dt$

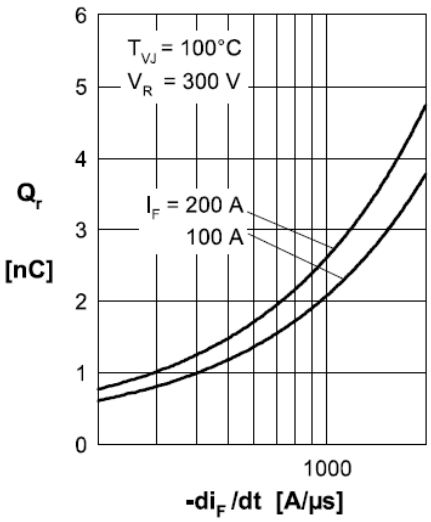


Fig. 3 Peak reverse current I_{RM} versus $-dI_F/dt$.

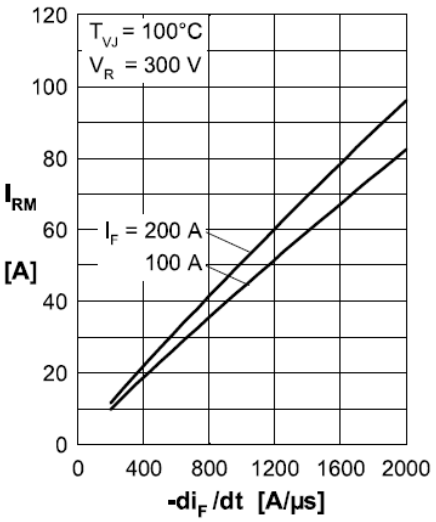


Fig. 4 Dynamic parameters Q_r, I_{RM} versus T_{VJ}

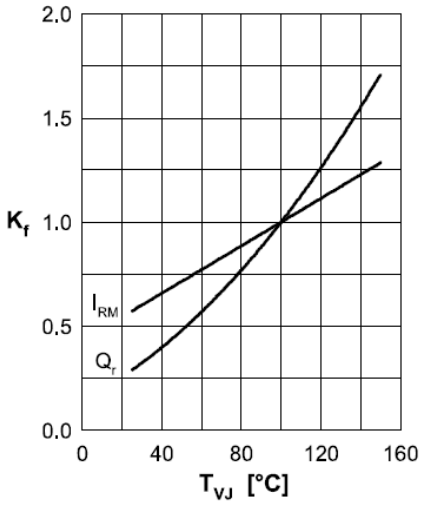


Fig. 5 Recovery time t_{rr} versus -dI_F/dt.

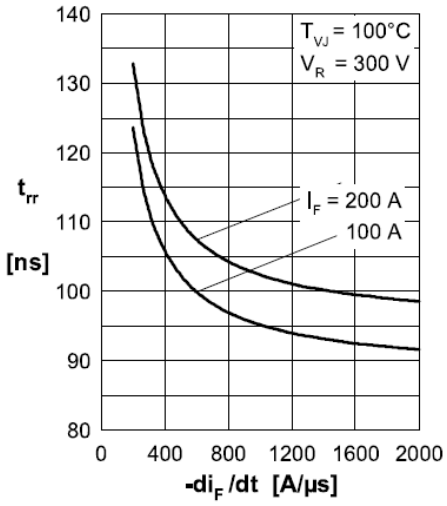


Fig. 6 Peak forward voltage V_{FR} and t_{rr} versus dI_F/dt

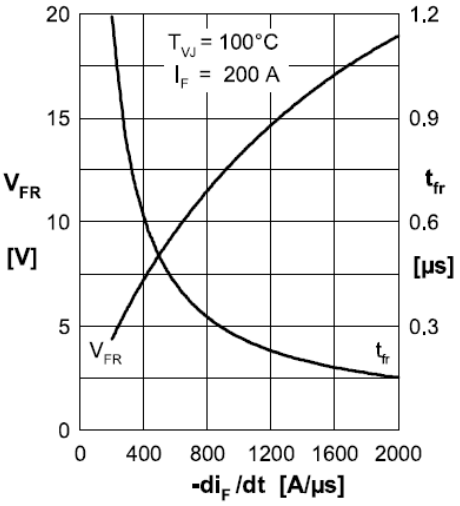
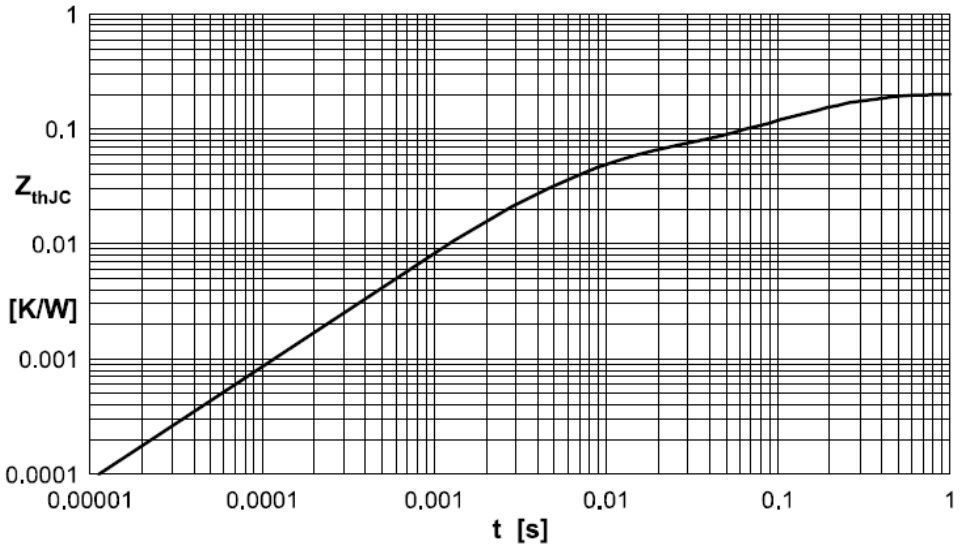


Fig. 7 Transient thermal resistance junction to case



Ordering Information Tabel

Device code

C KM U 240 - 06

CE's power module

Circuit configuration
KM= Base common cathode

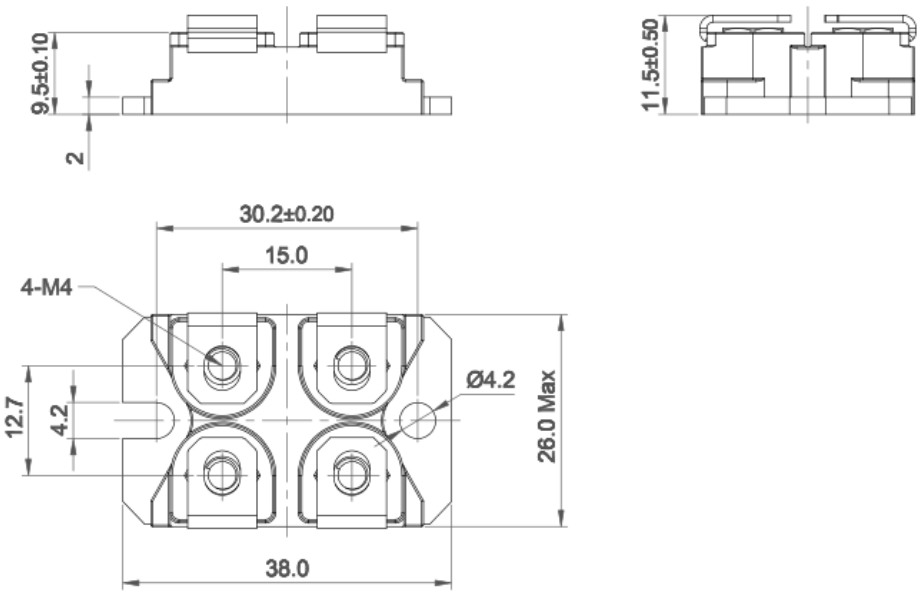
"U" for Ultrafast rectifier

Maximum average forward current (240A)

Voltage rating (06= 600V)

Package Outline Information

SOT-227 Package



Dimensions in mm