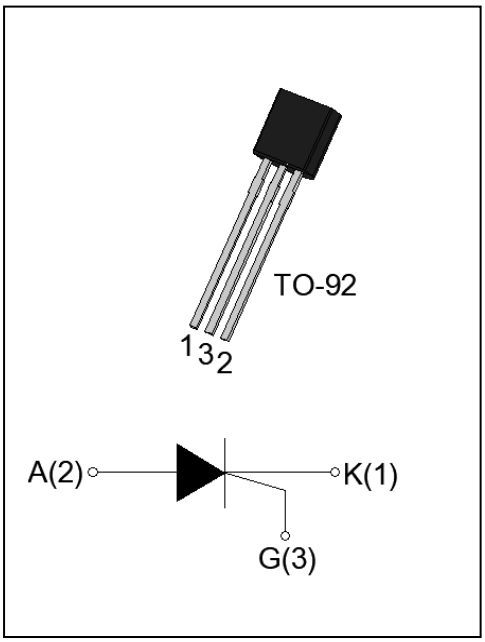
MCR100-6D 0.8A Sensitive SCR

Rev.A.1.0

DESCRIPTION:

The MCR100-6D SCR provides high dV/dt rate with strong resistance to electromagnetic interface. It is especially recommended for use on residual current circuit breaker, straight hair, igniter etc. Package TO-92 is RoHS compliant.



MAIN FEATURES

Symbol	Value	Unit
$I_{T(RMS)}$	0.8	A
V_{DRM} /V_{RRM}	500	V
I_{GT}	≤120	μA

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Storage junction temperature range	T_{stg}	-40-150	℃
Operating junction temperature range	T_j	-40-125①	℃
Repetitive peak off-state voltage (T_j=25℃)	V_{DRM}	500	V
Repetitive peak reverse voltage (T_j=25℃)	V_{RRM}	500	V
Average on-state current (T_C≤60℃)	$I_{T(AV)}$	0.5	A
RMS on-state current (T_C≤60℃)	$I_{T(RMS)}$	0.8	A
Non repetitive surge peak on-state current (t_p=10ms , T_j=25℃)	I_{TSM}	8	A
Non repetitive surge peak on-state current (t_p=8.3ms , T_j=25℃)		9	
I^2t value for fusing (t_p=10ms , T_j=25℃)	I^2t	0.32	A^2s
Critical rate of rise of on-state current (I_G=2×I_{GT} , f=100Hz , T_j=125℃)	dI/dt	50	A/μs
Peak gate current (t_p=20μs, T_j=125℃)	I_{GM}	1	A
Average gate power dissipation (T_j=125℃)	$P_{G(AV)}$	0.1	W

Peak gate power	P_{GM}	2	W
Peak pulse voltage (T_j=25℃; non-repetitive,off-state;FIG.7)	V_{pp}	1	kV

NOTE 1: When we parallel connect a ≤1KΩ resistor between Gate and Cathode, the T_j can reach 125℃; if without this resistor, the T_j only can reach 110℃.

ELECTRICAL CHARACTERISTICS (T_j=25℃ unless otherwise specified)

Symbol	Test Condition	Value			Unit
		MIN.	TYP.	MAX.	
I_{GT}	V_D=12V R_L=33Ω	-	-	120	μA
V_{GT}		-	0.6	0.8	V
V_{GD}	V_D=V_{DRM} T_j=125℃	0.2	-	-	V
I_L	I_G=1.2 I_{GT}	-	-	5	mA
I_H	I_T=0.05A	-	-	3	mA
dV/dt	V_D=335V T_j=125℃ R_{GK}=1KΩ	20	-	-	V/μs
	V_D=335V T_j=125℃ R_{GK}=220Ω	50	-	-	
t_{on}	I_G=10mA I_A=20mA I_R=2mA T_j=25℃	-	2	-	μs
t_{off}		-	-	15	μs

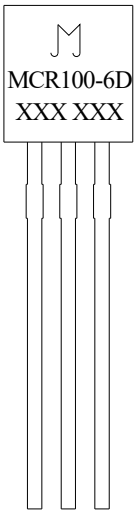
STATIC CHARACTERISTICS

Symbol	Parameter		Value(MAX.)	Unit
V_{TM}	I_T=1A t_p=380μs	T_j=25℃	1.3	V
V_{TO}	Threshold voltage	T_j=125℃	0.9	V
R_D	Dynamic Resistance	T_j=125℃	0.3	Ω
I_{DRM}	V_D=V_{DRM} V_R=V_{RRM}	T_j=25℃	1	μA
I_{RRM}		T_j=125℃	0.1	mA

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	junction to case (DC)	65	℃/W
$R_{th(j-a)}$	junction to ambient (DC)	140	℃/W

MARKING



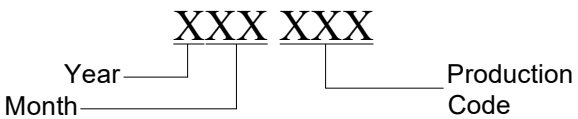


FIG.1 Maximum power dissipation versus RMS on-state current

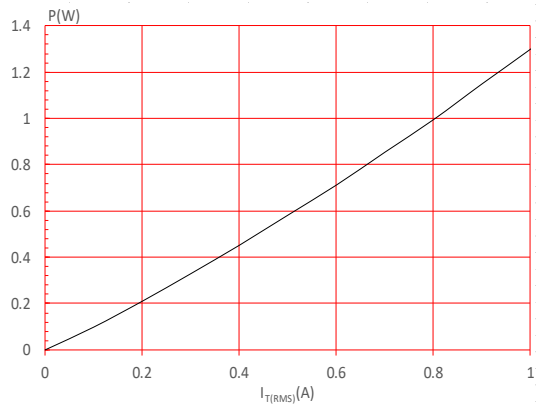


FIG.2: RMS on-state current versus case temperature

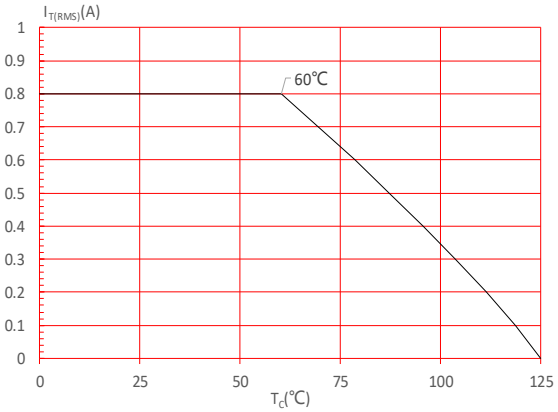


FIG.3: Surge peak on-state current versus number of cycles

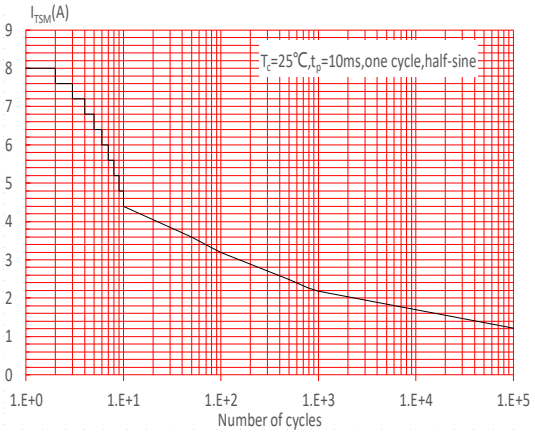


FIG.4: On-state characteristics

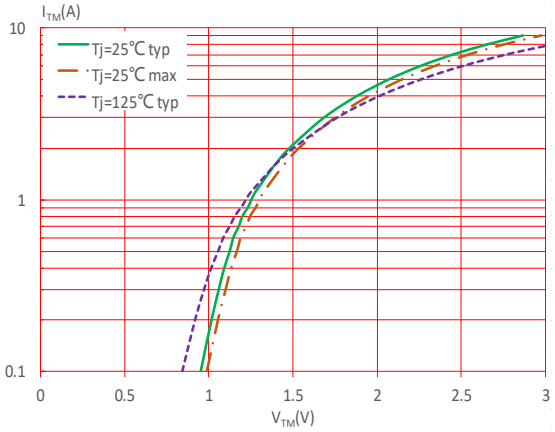


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width t_p<10ms, and corresponding value of I^2t (dI/dt<50A/μs)

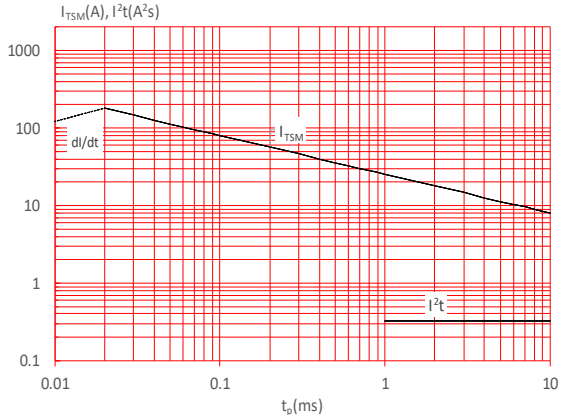


FIG.6: Relative variations of gate triggercurrent, holding current and latching current versus junction temperature

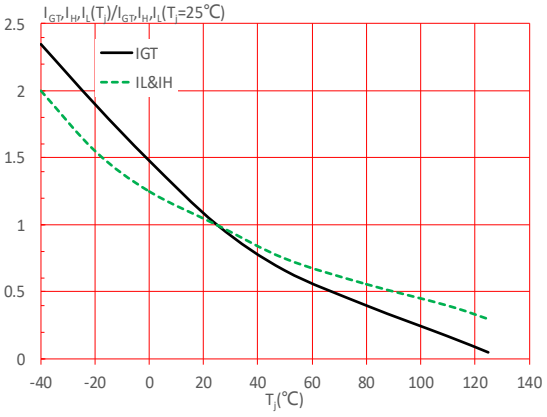
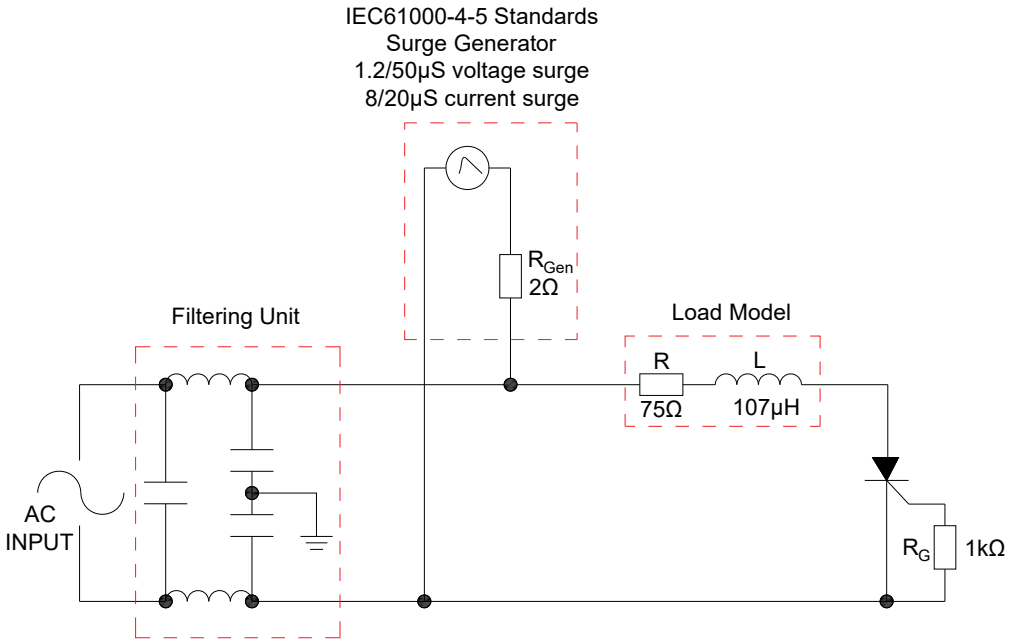


FIG.7：Test circuit for inductive and resistive loads to IEC-61000-4-5 standards.



SHAPING AND SOLDERING PARAMETERS

Refer to《Instructions for installation of plastic-sealed in-line power devices》released by JieJie

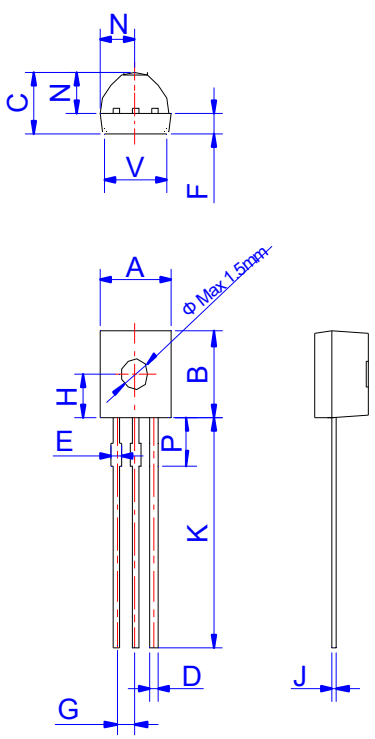
ORDERING INFORMATION

Order code	Voltage V_{DRM}/V_{RRM} (V)	IGT(μA)	Package	Base qty. (pcs)	Delivery mode
MCR100-6D	500	≤120	TO-92	1,000	Bulk Pack
MCR100-6D -TR				2,000	Tape & Reel

Document Revision History

Date	Revision	Changes
May.23, 2023	A.1.0	Last update

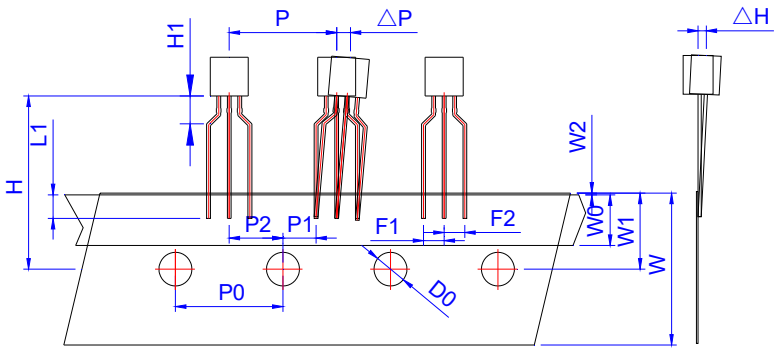
PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.45		5.20	0.175		0.205
B	4.32		5.33	0.170		0.210
C	3.18		4.19	0.125		0.165
D	0.407		0.533	0.016		0.021
E	0.50		0.70	0.020		0.028
F	1.10		1.30			0.051
G	1.10		1.40	0.043		0.055
H	2.20		2.40	0.087		0.094
J	0.36		0.50	0.014		0.020
K	12.70		15.0	0.500		0.591
N	2.04		2.66	0.080		0.105
P	1.80		2.30	0.071		0.091
V	4.10		4.50	0.161		0.177

DELIVERY MODE

PACKAGE	OUTLINE	BAG (PCS)	INNER BOX (PCS)	CARTON BOX (PCS)
TO-92	Bulk Pack	1,000	10,000	50,000



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
P	12.40	12.70	13.00	0.488	0.500	0.512
P0	12.40	12.70	13.00	0.488	0.500	0.512
P1	3.55	3.85	4.15	0.140	0.152	0.163
P2	5.95	6.35	6.75	0.233	0.250	0.265
△P	-1.0	0	1.0	-0.039	0	0.039
F1、F2	2.30	2.50	2.70	0.090	0.098	0.106
F1-F2	-0.1	0	0.1	-0.004	0	0.004
W	17.50	18.00	19.00	0.689	0.709	0.748
W0	5.50	6.00	6.50	0.217	0.236	0.256
W1	8.50	9.00	9.50	0.335	0.354	0.374
W2			1.0			0.039
D0	3.80	4.0	4.20	0.150	0.157	0.165
△H	-1.0	0	1.0	-0.039	0	0.039
L1	2.5			0.098		
H	18.0	19.0	20.0	0.709	0.748	0.787
H1			2.70			0.106

PACKAGE	OUTLINE	REEL (PCS)	INNER BOX (PCS)	CARTON BOX (PCS)
TO-92	Tape & Reel	/	2,000	20,000