

FMBCRY04-80A

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FMBCRY04-80A

4.0A 800V Triode AC Semiconductor Switch

Features

- V_D / V_R : 800V, $I_{T(RMS)}$: 4A, I_{GT} : 5mA.
- Glass passivated junctions.
- High voltage and surge capability.
- Low thermal resistance and durability.
- Triggering in three quadrants.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex.FMBCRY04-80A-H.

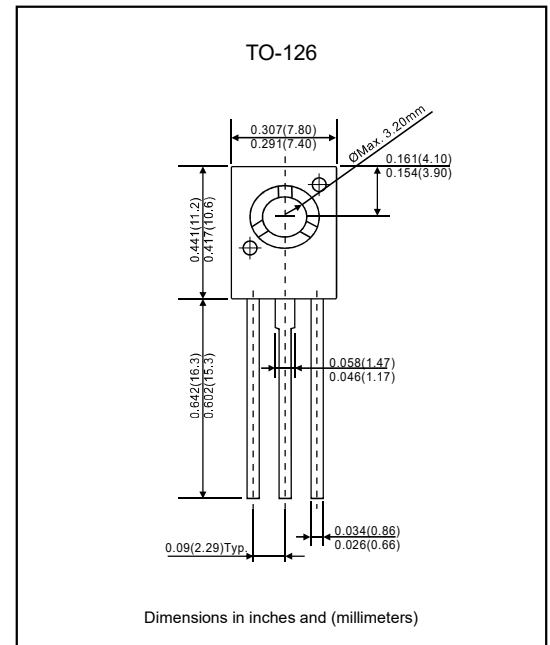
Applications

- Static relays and heating regulation.
- In-duction motor starting circuits.
- Phase control operation in light dimmers.
- Motor speed controllers.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant.
- Case : Molded plastic, TO-126.
- Terminals : Solder plated, solder able per MIL-STD-750, Method 2026.
- Mounting Position : Any.

Package outline



Maximum ratings (At $T_c=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Repetitive peak off-state voltage (T = 25°C)	V_{DRM}	800	V
Repetitive peak reverse voltage (T = 25°C)	V_{RRM}	800	V
Non repetitive surge peak off-state voltage	V_{DSM}	$V_{DRM} + 100$	V
Non repetitive peak reverse voltage	V_{RSM}	$V_{RRM} + 100$	V
RMS on-state current (T _c =100°C)	$I_{T(RMS)}$	4	A
Non repetitive surge peak on-state current (180° conduction angle, f=50Hz)	I_{TSM}	30	A
I ² t value for fusing (t _p =10ms)	I ² t	3.1	A ² S
Critical rate of rise of on-state current (I = 2×I _{GT} , t _i ≤ 100ns)	I-II-III	50	A/μS
	IV	10	
Peak gate current	I _{GM}	2	A
Average gate power dissipation	P _{G(AV)}	0.5	W
Thermal resistance, junction to case (AC)	R _{θJC}	4.1	°C/W
Operating junction temperature	T _J	+125	°C
Storage junction temperature range	T _{STG}	-40 to +150	°C

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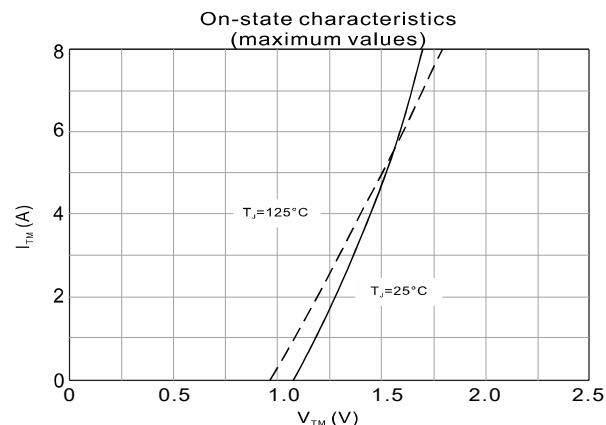
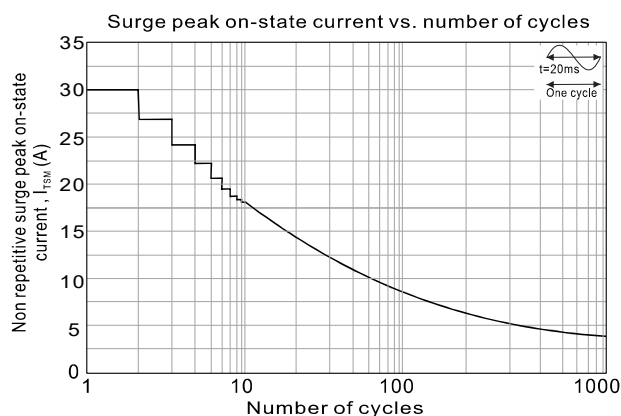
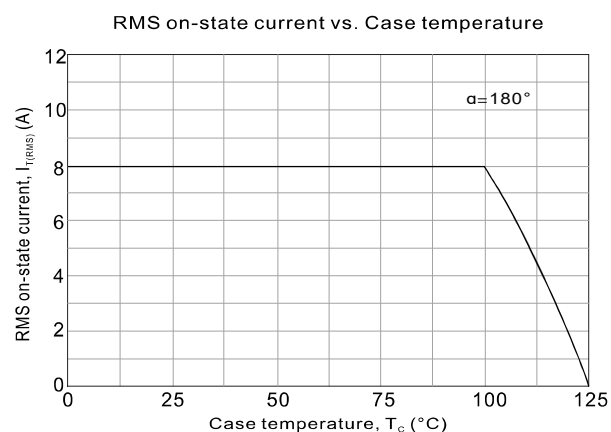
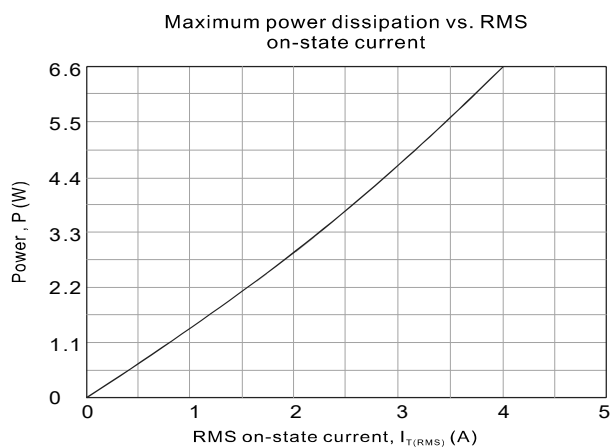
Electrical characteristics (T=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Quadrant	Min.	Typ.	Max.	Unit
Gate trigger current	I_{GT}	$V_D=12V$	I-II-III			5	mA
			IV			10	
Gate trigger voltage	V_{GT}		ALL			1.3	V
Gate Non-trigger voltage	V_{GD}	$V_D=V_{DRM}$ ($T_J=125^\circ C$)	ALL	0.2			V
Latching current	I_L	$I_G=1.2I_{GT}$	I-III-IV			10	mA
			II			15	
Holding current	I_H	$I_T=100mA$				10	mA
Critical rate of rise off-state voltage	dv/dt	$V_D=2/3V_{DRM}$ gate open ($T_J=125^\circ C$)		50			V/ μs

Static characteristics

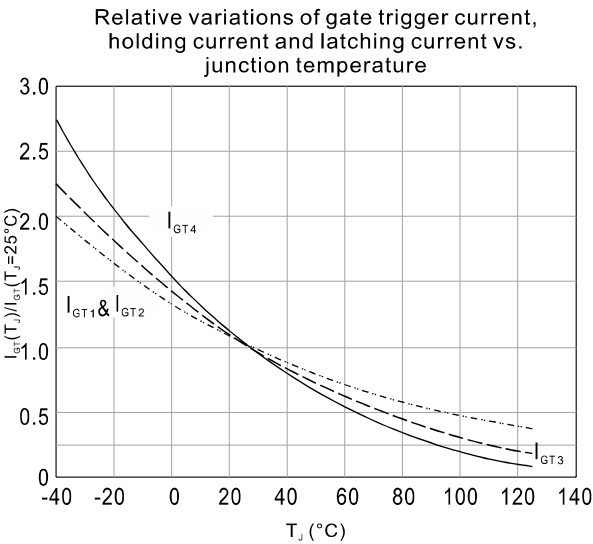
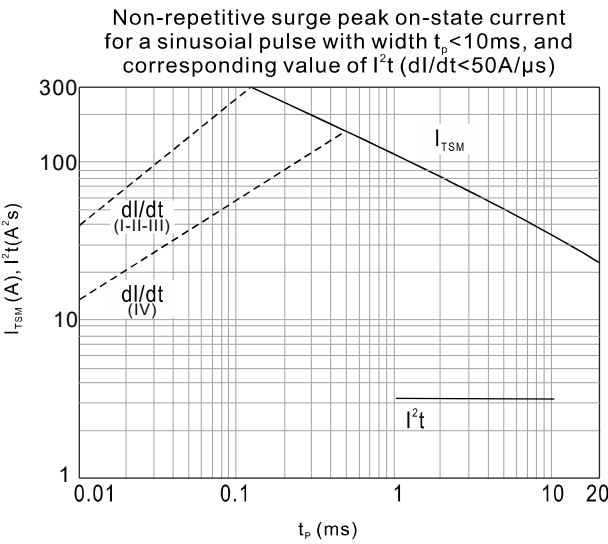
Peak on-state voltage	V_{TM}	$I_{TM}=5.5A$, $t_p=380\mu s$	($T_J=25^\circ C$)			1.65	V
Repetitive peak off-state current	I_{DRM}	$V_D=V_{DRM}$, $V_R=V_{RRM}$	($T_J=25^\circ C$)			5	μA
Repetitive peak reverse current	I_{RRM}		($T_J=125^\circ C$)			1	mA

Rating and characteristic curves



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Rating and characteristic curves



Pinning information

Pin	Simplified outline	Symbol
Pin1 T1 (Main Terminal-1) Pin2 T2 (Main Terminal-2) Pin3 Gate		

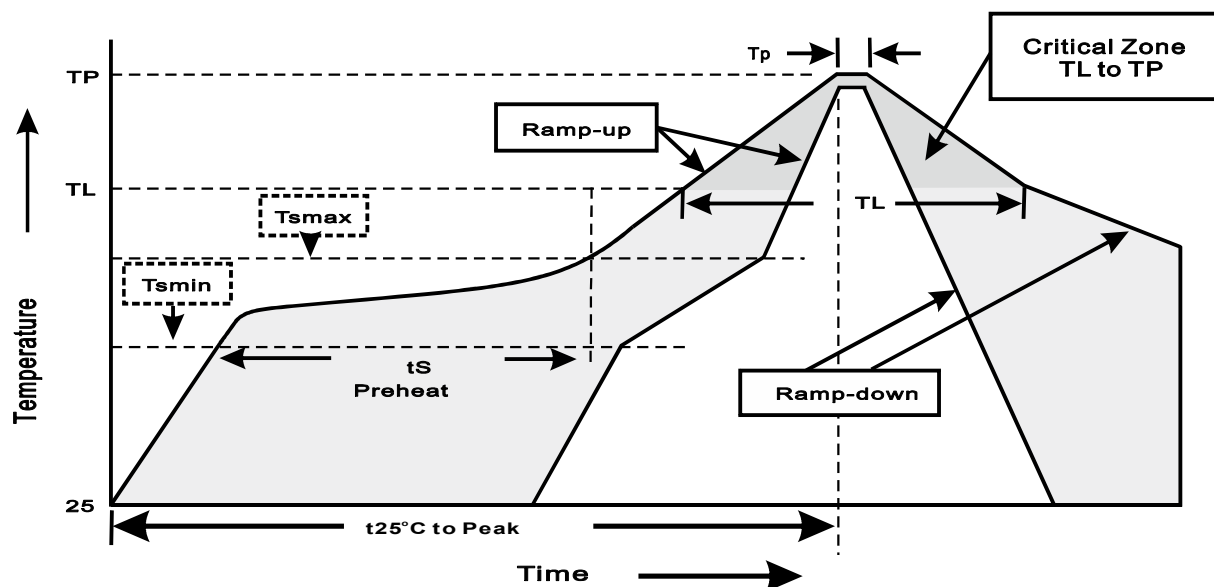
Marking

Type number	Marking code
FMBCRY04-80A	F0405

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Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T _L to T _P)	<3°C/sec
Preheat -Temperature Min(T _{smin}) -Temperature Max(T _{smax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smax} to T _L -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T _L) -Time(t _L)	217°C 60~260sec
Peak Temperature(T _P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t _P)	10~30sec
Ramp-down Rate	<3°C/sec
Time 25°C to Peak Temperature	<6minutes