

FMBCRP0810-60-H

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FMBCRP0810-60-H

8.0A 600V Triode AC Semiconductor Switch

Features

- V_D / V_R : 600V, $I_{T(RMS)}$: 8A, I_{GT} : 10mA.
- Glass passivated junctions.
- High voltage and surge capability.
- Low thermal resistance and durability.
- Triggering in all four quadrants.
- Lead-free parts meet RoHS requirements.
- Halogen-free (IEC61249-2-21).

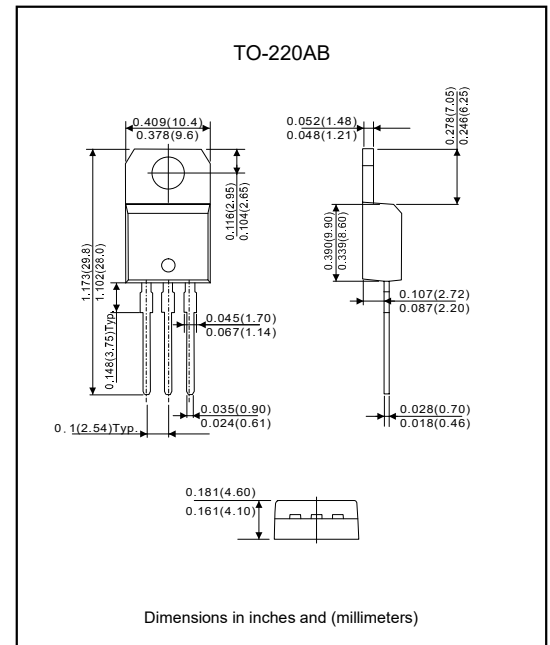
Applications

- Static relays.
- 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-220AB.
- 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 ($T=25^\circ\text{C}$)	V_{DRM}	600	V
Repetitive peak reverse voltage ($T=25^\circ\text{C}$)	V_{RRM}	600	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 ($T_c=107^\circ\text{C}$)	$I_{T(RMS)}$	8	A
Non-repetitive surge peak on-state current (180° conduction angle, $f=50\text{Hz}$)	I_{TSM}	80	A
I^2t value for fusing ($t_p=10\text{ms}$)	I^2t	32	A^2S
Critical rate of rise of on-state current ($I=2 \times I_{GT}$, $t_i \leq 100\text{ns}$)	di/dt	50	$\text{A}/\mu\text{S}$
Peak gate current	I_{GM}	4	A
Average gate power dissipation	$P_{G(AV)}$	1	W
Thermal resistance, junction to case (AC)	$R_{\theta JC}$	1.8	$^\circ\text{C}/\text{W}$
Operating junction temperature	T_J	+125	$^\circ\text{C}$
Storage junction temperature range	T_{STG}	-40 to +150	$^\circ\text{C}$

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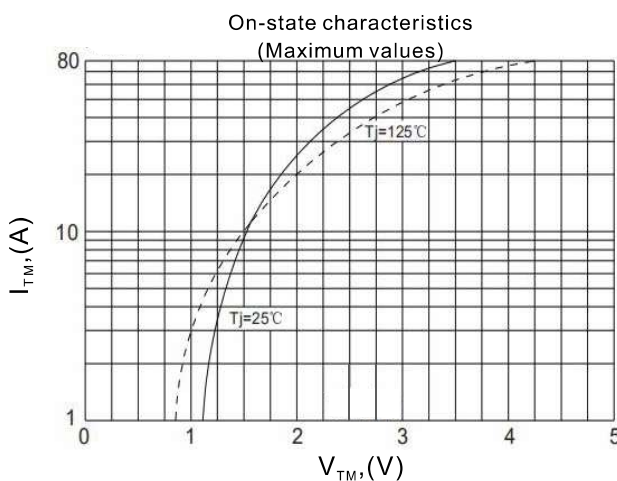
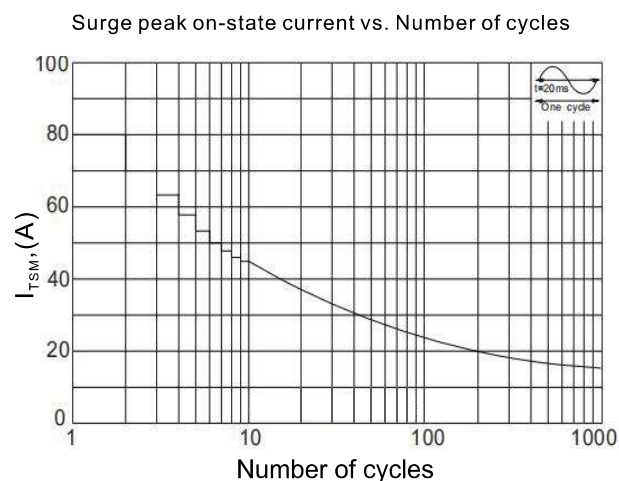
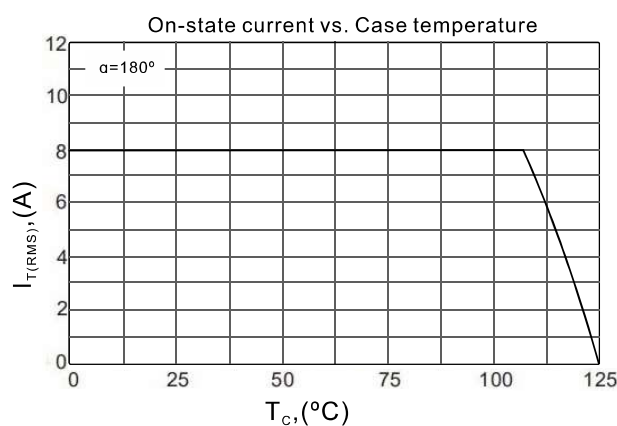
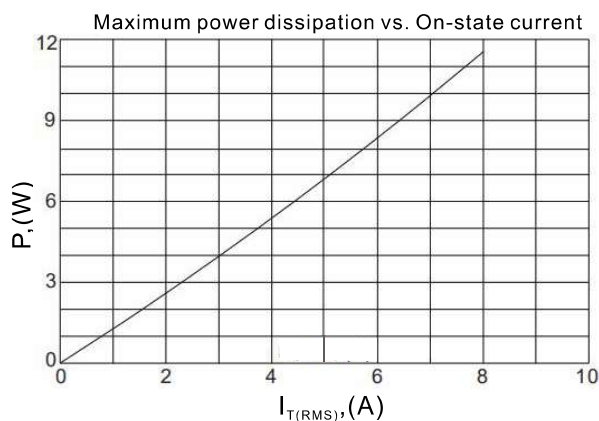
Electrical characteristics (T=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Quadrant	Min.	Typ.	Max.	Unit
Gate trigger current	I_{GT}	$V_D=12V$	I-II-III			10	mA
			IV			25	
Gate trigger voltage	V_{GT}	$V_D=12V$	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			20	mA
			II-IV			35	
Holding current	I_H	$I_T=200mA$				20	mA
Critical rate of rise of off-state voltage	dv/dt	$V_D=2/3V_{DRM}$ gate open, $T_J=125^\circ C$				100	V/ μs

Static characteristics

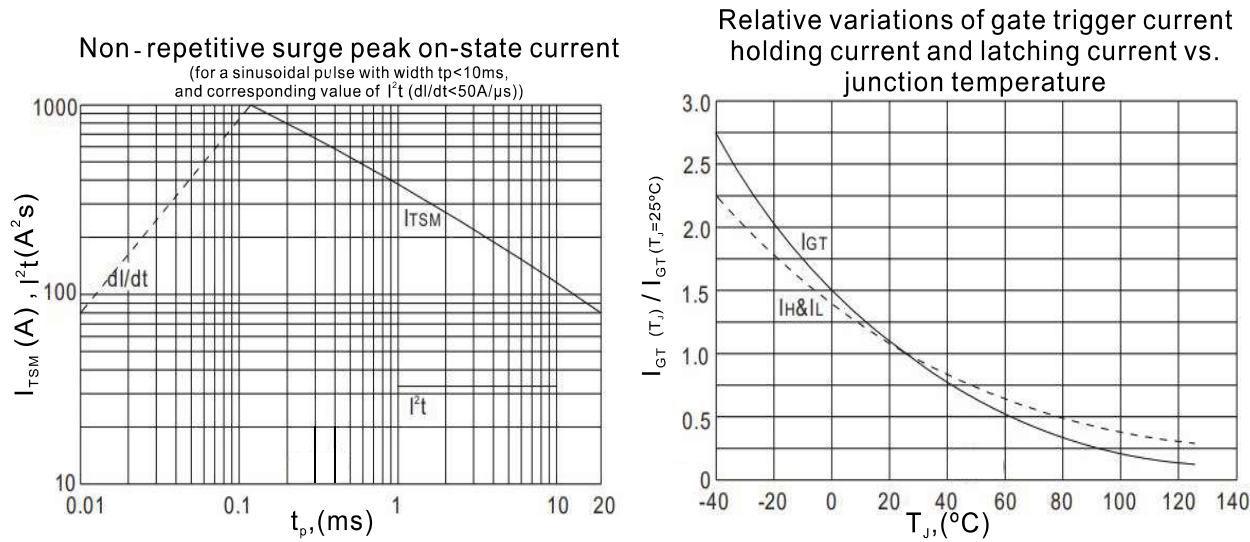
Peak on-state voltage	V_{TM}	$I_{TM}=11A, t_p=380\mu s$	($T_J=25^\circ C$)			1.55	V
Repetitive peak off-state current	I_{DRM}	$V_D=V_{DRM}, V_R=V_{RRM}$	($T_J=25^\circ C$)			5	μA
Repetitive peak reverse current	I_{RRM}		($T_J=125^\circ C$)			1	mA

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
FMBCRP0810-60-H	FTRI0810-60

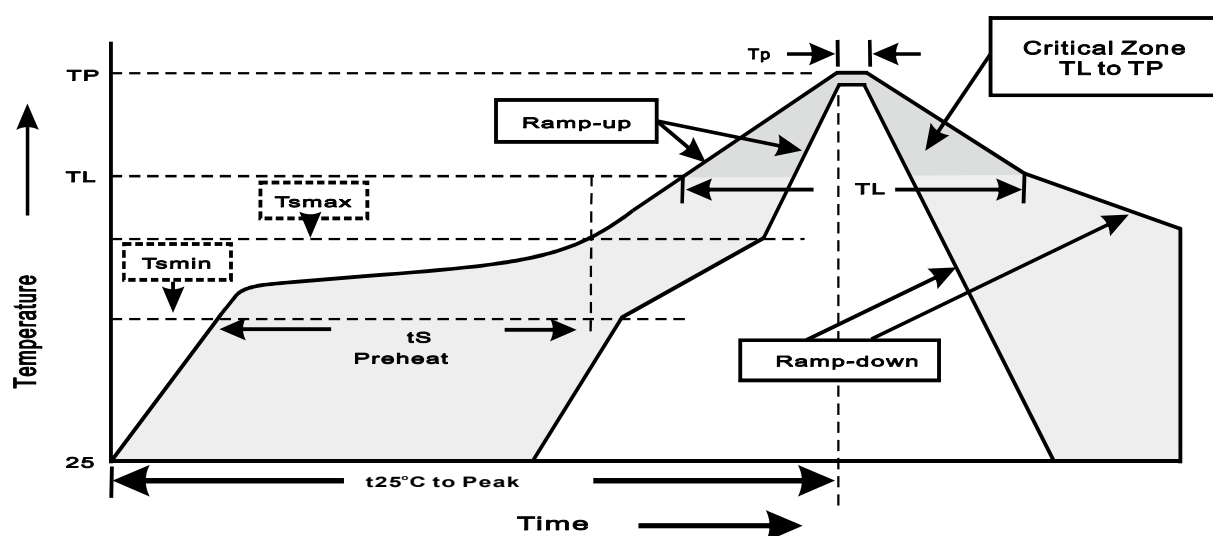
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Packing Information

Device	Outline	Device Package	Tube (pcs)	Per Carton (pcs)
FMBCRP0810-60-H	Tube	TO-220AB	50	8,000

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)	$<3^{\circ}\text{C}/\text{sec}$
Preheat -Temperature Min(T_{min}) -Temperature Max(T_{max}) -Time(min to max)(t_s)	150°C 200°C $60\sim 120\text{sec}$
T_{max} to T_L -Ramp-upRate	$<3^{\circ}\text{C}/\text{sec}$
Time maintained above: -Temperature(T_L) -Time(t_L)	217°C $60\sim 260\text{sec}$
Peak Temperature(T_P)	$255^{\circ}\text{C}-0/+5^{\circ}\text{C}$
Time within 5°C of actual Peak Temperature(t_P)	$10\sim 30\text{sec}$
Ramp-down Rate	$<3^{\circ}\text{C}/\text{sec}$
Time 25°C to Peak Temperature	$<6\text{minutes}$