FMBCRD06-60

List

FMBCRD06-60

6.0A 600V Triode AC Semiconductor Switch

Features

- V_D / V_R : 600V, $I_{T(RMS)}$: 6A, 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.FMBCRD06-60-H.

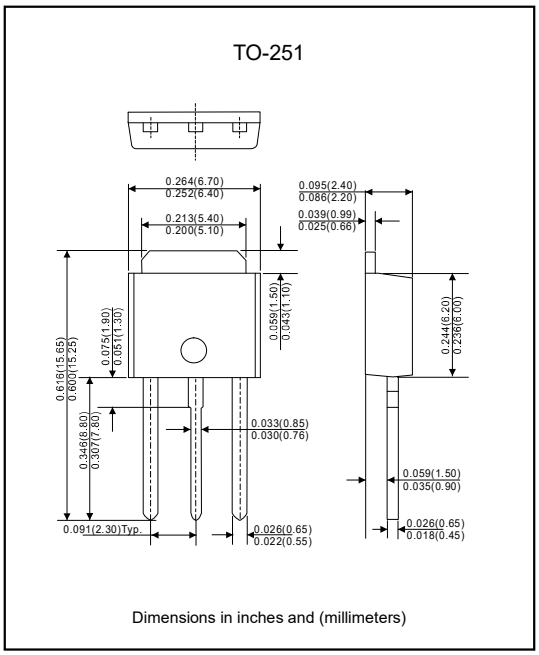
Applications

- 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-251.
- Terminals : Solder plated, solder able per MIL-STD-750, Method 2026.
- Mounting Position : Any.

Package outline



Dimensions in inches and (millimeters)

Maximum ratings (At T_C=25°C unless otherwise specified)

Parameter		Symbol	Ratings	Unit
Repetitive peak off-state voltage	(T =25°C)	V_{DRM}	600	V
Repetitive peak reverse voltage	(T =25°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=100°C)	$I_{T(RMS)}$	6	A
Non repetitive surge peak on-state current	(180° conduction angle, f=50Hz)	I_{TSM}	60	A
I^2t value for fusinging	(t_p=10ms)	I^2t	18	A^2S
Critical rate of rise of on-state current	(I =2×I_{GT}, t_r ≤ 100ns)	di/dt	50	A/μS
Peak gate current		I_{GM}	2	A
Average gate power dissipation		$P_{G(AV)}$	1	W
Thermal resistance, junction to case (AC)		$R_{\theta JC}$	2.7	°C/W
Operating junction temperature		T_J	+125	°C
Storage junction temperature range		T_{STG}	-40 to +150	°C

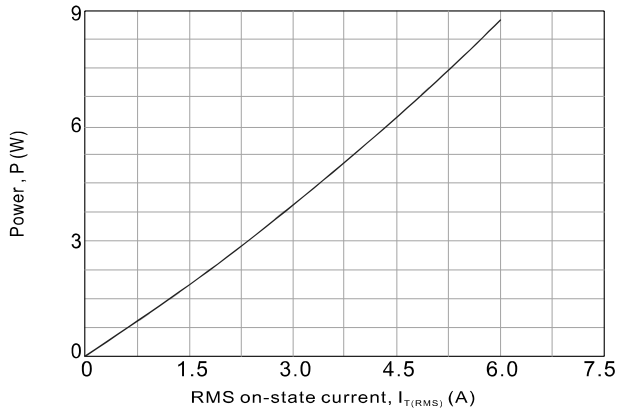
FMBCRD06-60

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

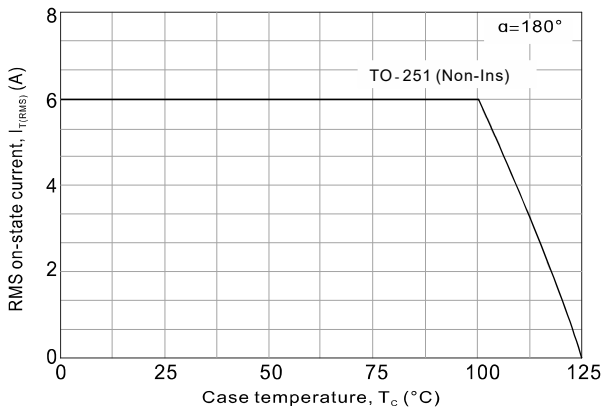
Parameter	Symbol	Conditions	Quadrant	Min.	Typ.	Max.	Unit
Gate trigger current	I_{GT}	V_D=12V	I-II-III			5	mA
			IV			10	
Gate trigger voltage	V_{GT}		ALL			1.3	V
Gate Non-trigger voltage	V_{GD}	$V_D=V_{DRM}$ (T_J=125°C)	ALL	0.2			V
Latching current	I_L	$I_G=1.2I_{GT}$	I-III			5	mA
			II-IV			10	
Holding current	I_H	I_T=200mA				5	mA
Critical rate of rise off-state voltage	dv/dt	$V_D=2/3V_{DRM}$ gate open (T_J=125°C)		15			V/μs
Static characteristics							
Peak on-state voltage	V_{TM}	I_{TM}=8.5A, t_p=380μs (T_J=25ºC)				1.5	V
Repetitive peak off-state current	I_{DRM}	$V_D=V_{DRM}$, $V_R=V_{RRM}$ (T_J=25ºC)				5	μA
Repetitive peak reverse current	I_{RRM}	(T_J=125ºC)				1	mA

Rating and characteristic curves

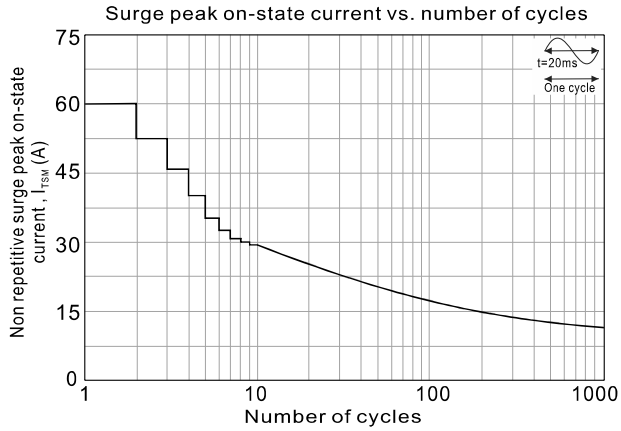
Maximum power dissipation vs. RMS on-state current



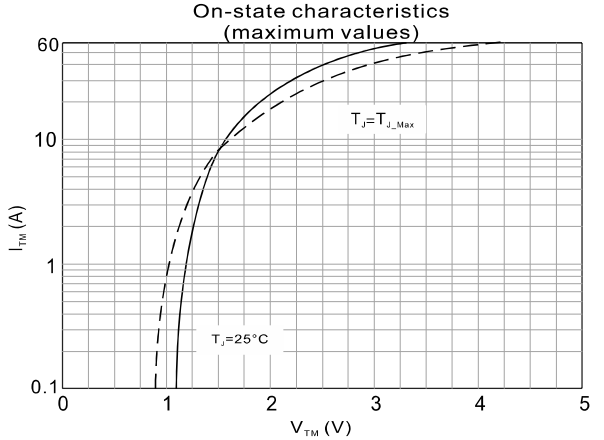
RMS on-state current vs. Case temperature



Surge peak on-state current vs. number of cycles

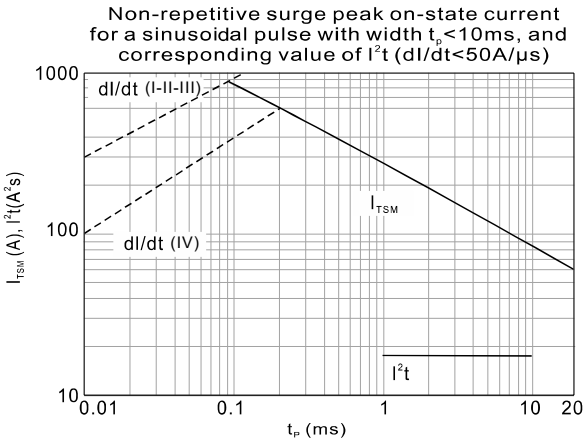


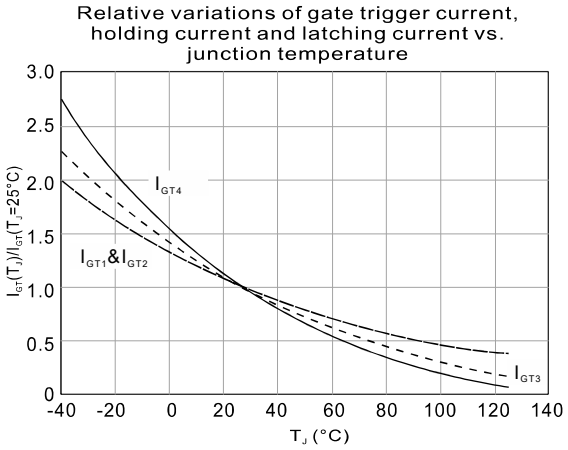
On-state characteristics (maximum values)



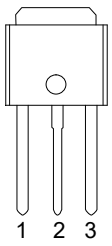
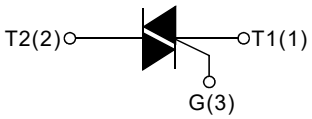
FMBCRD06-60

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
FMBCRD06-60	F0605-6H

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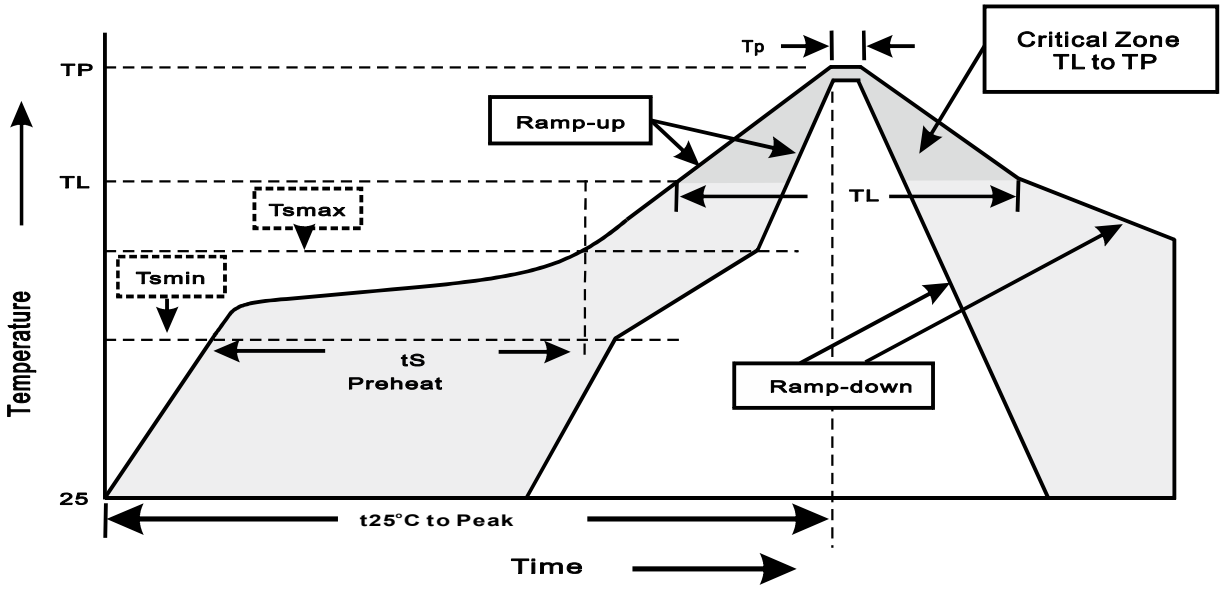
Suggested thermal profiles for soldering processes

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(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax 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