

Target specification of 1600V/75A Converter + Brake module (Tentative)

1. Maximum rating (at Tc=25°C unless otherwise specified)

Item		Symbol	Condition	Max.	Unit	
Converter	Repetitive peak reverse voltage	VRRM		1600	V	
	Non-repetitive peak reverse voltage	VRRM		1760	V	
	Average output current	Io	50/60Hz sine wave Tc=93°C	75	A	
	One cycle surge current (50Hz)	IFSM	From rated load	1000	A	
	I ² t	I ² t	From rated load	4000	A ² s	
	Operation junction temperature	Tj		-40 to +125	°C	
Brake	Collector-Emitter voltage	VCEs		1400	V	
	Gate-Emitter voltage	VGES		±20	V	
	Collector current	Ic	DC	Tc=25°C	50	A
				Tc=75°C	35	
		Icp	1ms	Tc=25°C	100	A
				Tc=75°C	70	
	Collector power dissipation	Pc	1 device		240	W
	Repetitive peak reverse voltage	VRRM			1400	V
	Operation junction temperature	Tj			150	°C
	Storage junction temperature	Tstg			-40 to +125	°C
Isolation voltage	Viso	AC : 1min.		2500	V	
Mounting screw torque		M5 screw			N·m	

2. Electrical characteristics (at Tj=25°C unless otherwise specified)

Item		Symbol	Condition	min.	typ.	max.	Unit
Co.	Forward voltage	VFM	Tj=25°C, IFM=75A			1.30	V
	Reverse current	IRRM	Tj=150°C, VR=VRRM			15	mA
Brake	Zero gate voltage Collector current	ICES	VGE=0V, VCE=1400V			1.0	mA
	Gate-Emitter leakage current	IGES	VCE=0V, VGE=±20V			200	µA
	Collector-Emitter saturation voltage	VCE(sat)	VGE=15V, Ic=35A		2.3		V
	Turn-on time	ton	Vcc= V IC=35A				µs
		tr					
	Turn-off time	toff	VGE=±15V RG=33 Ω				µs
		tf					
Reverse current	IRRM	VR=1400V			1.0	mA	

3. Thermal characteristics

Item	Symbol	Condition	min.	typ.	max.	Unit
Thermal resistance	Rth(j-c)	Converter (per total loss)			0.30	°C/W
		Brake IGBT (1 device)			0.52	
Thermal Resistance (Case to fine)	Rth(c-f)	with thermal compound				°C/W

4. Outline drawing and equivalent circuit

MT5Q0588

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