

Ratings and characteristics of diode module with Brake (draft)

Type : 6R1MBi75P-160-03

1. Maxmum rating(at Tj=25°C / Tc=25°C unless otherwise specified)

Item		Symbol	Condition		Max.	Unit
Converter	Repetitive peak reverse voltage	V_{RRM}			1600	V
	Non-repetitive peak reverse voltage	V_{RSM}			1900	V
	Average output current	I_o	50Hz/60Hz sine wave Tc=115°C		75	A
	One cycle surge current (50Hz)	I_{FSM}	From rated load		600	A
	I^2t	I^2t	From rated load		1440	A ² s
	Operation junction temperature	Tj			-40 to +150	°C
Brake	Collector-Emitter voltage	V_{CES}			1400	V
	Gate-Emitter voltage	V_{GES}			±20	V
	Collector current	I_c	DC	Tc=25°C	50	A
				Tc=75°C	35	
		I_{cp}	1ms	Tc=25°C	100	A
				Tc=75°C	70	
	Collector power dissipation	P_c			180	W
	Repetitive peak reverse voltage	V_{RRM}			1400	V
	Operation junction temperature	Tj			-40 to +150	°C
Storage junction temperature	Tstg			-40 to +125	°C	
Isolation voltage	Viso	AC:1min		3000	V	
Mounting screw torque		M5 screw		2.0 to 2.5	N·m	

2. electrical characteristics (at Tj=25°C / Tc=25°C unless otherwise specified)

Item		Symbol	Condition	min.	typ.	Max.	Unit	
Co.	Forward voltage	V_{FM}	$I_{FM}=75A$			1.35	V	
	Reverse current	I_{RRM}	Tj=150°C, $V_R=1600V$			15.0	mA	
Brake	Zero gate voltage Collector current	I_{CES}	$V_{GE}=0V, V_{CE}=1400V$			1.0	mA	
	Gate-Emitter leakage current	I_{GES}	$V_{CE}=0V, V_{GE}=\pm 20V$			200	nA	
	Collector-Emitter saturation voltage	$V_{CE(sat)}$	$V_{GE}=15V, I_c=35A$		2.4	2.7	V	
	Turn-on time	t_{on}	$V_{cc}=800V$			0.35	1.20	us
		t_r	$I_c=35A$			0.25	0.60	
	Turn-off time	t_{off}	$V_{GE}=\pm 15V$			0.45	1.00	
		t_f	$R_G=33\Omega$			0.08	0.30	
Reverse current	I_{RRM}	$V_R=V_{RRM}$				1.0	mA	

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3. Thermal characteristics

Item	Symbol	Condition	min.	typ.	Max.	Unit
Thermal resistance	Rth(j-c)	Converter	Per total loss		0.16	°C/W
			Per each device		0.96	
		Brake IGBT (1device)		0.70		
Thermal resistance (case to fin)	Rth(c-f)	with thermal compound			0.08	°C/W

4. Outline drawing and equivalent circuit is shown in page 3/3

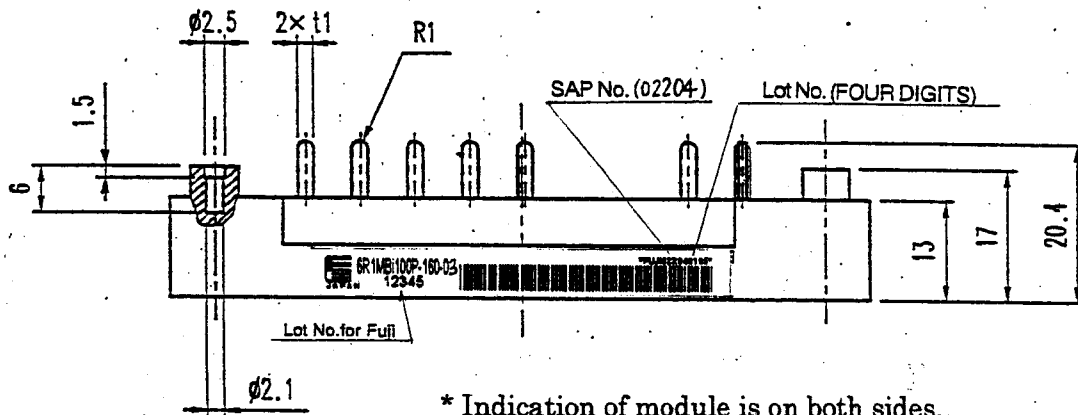
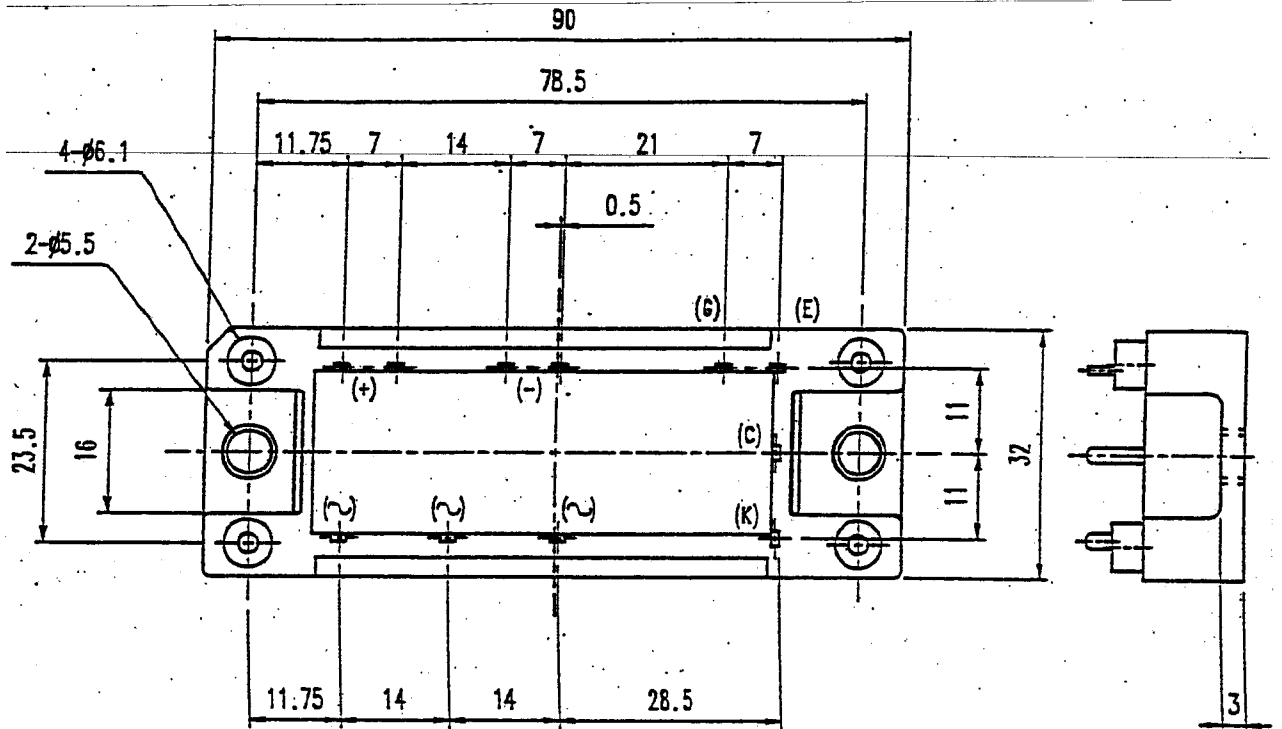
Note : This product is selection version of VRSM \geq 1900V from 6R1MBi75P-160-02.
All of reliability test condition is also based on 6R1MBi75P-160-02.

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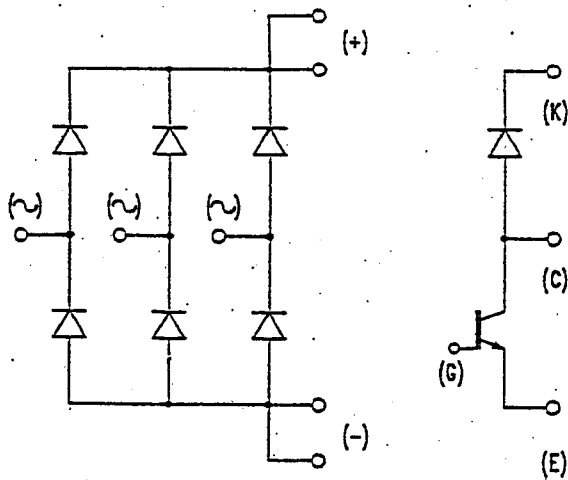
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* Indication of module is on both sides.



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