

IGBT MODULE (S-Series)

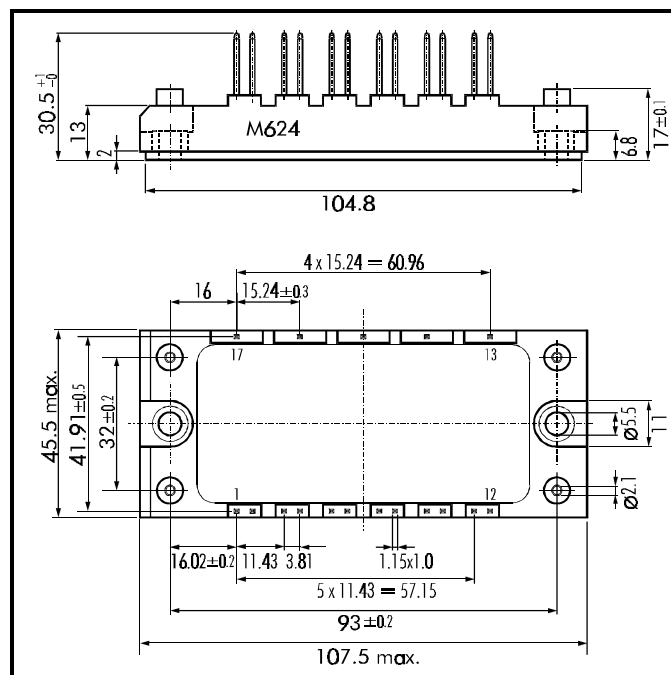
■ Features

- *NPT-Technologie*
- *Solderable Package*
- *Square SC SOA at $10 \times I_C$*
- *High Short Circuit Withstand-Capability*
- *Small Temperature Dependence of the Turn-Off Switching Loss*
- *Low Losses And Soft Switching*

■ Applications

- *High Power Switching*
- *A.C. Motor Controls*
- *D.C. Motor Controls*
- *Uninterruptible Power Supply*

■ Outline Drawing



■ Maximum Ratings and Characteristics

- **Absolute Maximum Ratings** ($T_c=25^\circ\text{C}$)

Items		Symbols	Ratings	Units
Collector-Emitter Voltage		V_{CES}	1200	V
Gate -Emitter Voltage		V_{GES}	± 20	V
Collector Current (25°C / 80°C)	Continuous	I_C	25 / 15	A
	1ms	$I_{C\ PULSE}$	50 / 30	
	Continuous	$-I_C$	25 / 15	
	1ms	$-I_{C\ PULSE}$	50 / 30	
Max. Power Dissipation		P_C	145	W
Operating Temperature		T_j	+150	°C
Storage Temperature		T_{stg}	-40 ~ +125	°C
Isolation Voltage	A.C. 1min.	V_{is}	2500	V
Screw Torque		Mounting *1	3.5	Nm

Note: *1:Recommendable Value; 2.5 ~ 3.5 Nm (M5)

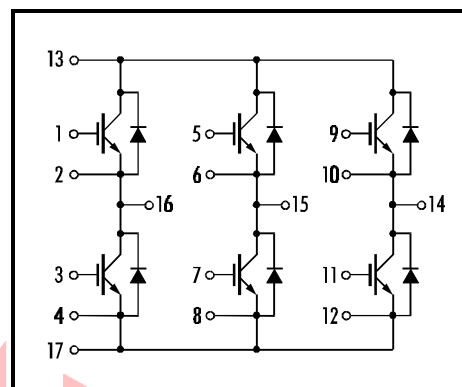
- **Electrical Characteristics** (at $T_j=25^{\circ}\text{C}$)

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Zero Gate Voltage Collector Current	I_{CES}	$V_{GE}=0V$ $V_{CE}=1200V$			1.0	mA
Gate-Emitter Leakage Current	I_{GES}	$V_{CE}=0V$ $V_{GE}=\pm 20V$			200	μA
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{GE}=20V$ $I_C=15mA$	6.0		9.0	V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE}=15V$ $I_C=15A$		2.1		V
Input capacitance	C_{ies}	$V_{GE}=0V$		1800		pF
Output capacitance	C_{oes}	$V_{CE}=10V$				
Reverse Transfer capacitance	C_{res}	$f=1MHz$				
Turn-on Time	t_{ON}	$V_{CC}=600V$		0.60	1.2	μs
	t_r	$I_C=15A$		0.40	0.6	
Turn-off Time	t_{OFF}	$V_{GE}=\pm 15V$		0.45	1.0	
	t_f	$R_G=82\Omega$		0.10	0.3	
Diode Forward On-Voltage	V_F	$I_F=15A$ $V_{GE}=0V$			3.3	V
Reverse Recovery Time	t_{rr}	$I_F=15A$			350	ns

- **Thermal Characteristics**

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	$R_{th(j-c)}$	IGBT			0.86	°C/W
	$R_{th(f-c)}$	Diode			1.50	
	$R_{th(c-f)}$	With Thermal Compound		0.05		

■ Equivalent Circuit



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