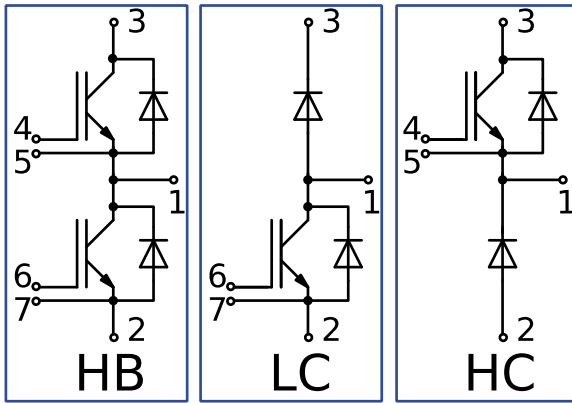
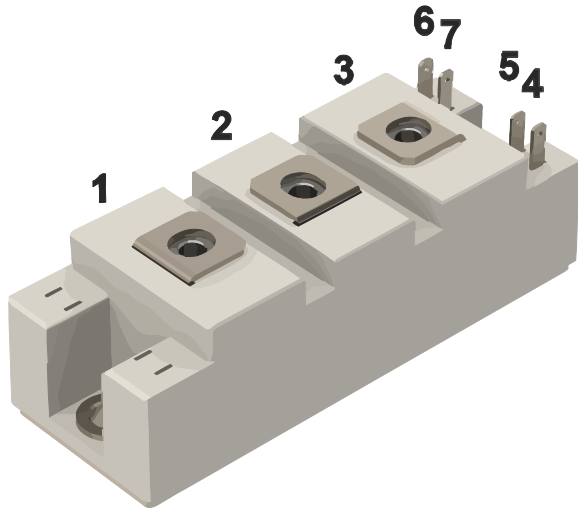


**Industry standard 34mm IGBT module**
**1700V 75A**

**Chip features**

- IGBT Chip
  - low  $V_{CE(sat)}$  value
  - 10  $\mu s$  short circuit @ 150°C
  - square RBSOA @  $2xI_C$
  - low EMI
- FRD Chip
  - fast and soft reverse recovery
  - low voltage drop

**Design features**

- copper baseplate
- $Al_2O_3$  DBC substrate
- ultrasonically welded power terminals
- improved thermal cycling
- RoHS compliant

**Typical application**

- AC motor drives
- solar inverter
- air conditioning
- high power converters and UPS

**Maximum rated values**

Definition	Symbol	Conditions	Value	Unit
<b>IGBT</b>				
Collector-Emitter voltage	$V_{CES}$	$V_{GE} = 0V$	1700	V
Collector current (nominal)	$I_{C\ nom}$		100	A
Collector current (maximum continuous)	$I_{C\ 25}$	$T_j = 175^\circ C, T_c = 25^\circ C$	128	A
	$I_{C\ 80}$	$T_j = 175^\circ C, T_c = 80^\circ C$	99	A
Repetitive peak collector current *1	$I_{CRM}$	$I_{CRM} = 3 \times I_{C\ nom}, t_p = 1ms$	225	A
Gate-Emitter voltage	$V_{GES}$		$\pm 20$	V
Junction temperature	$T_j$		-40 ... 175	°C
<b>Inverse diode / Freewheeling diode</b>				
Repetitive peak reverse voltage	$V_{RRM}$	$V_{GE} = 0V$	1700	V
Forward current (nominal)	$I_{F\ nom}$		75	A
Forward current (maximum continuous)	$I_{F\ 25}$	$T_j = 175^\circ C, T_c = 25^\circ C$	86	A
	$I_{F\ 80}$	$T_j = 175^\circ C, T_c = 80^\circ C$	63	A
Repetitive peak forward current *1	$I_{FRM}$	$I_{FRM} = 2 \times I_{F\ nom}, t_p = 1ms$	150	A
Surge (non-repetitive) forward current	$I_{FSM}$	$t_p = 1ms, \sin 180^\circ, T_j = 25^\circ C$	510	A
Junction temperature	$T_j$		-40 ... 175	°C
<b>Module</b>				
Storage temperature	$T_{stg}$		-40 ... 125	°C
Isolation voltage	$V_{isol}$	AC sinus 50 Hz, $t = 1min$	4000	V

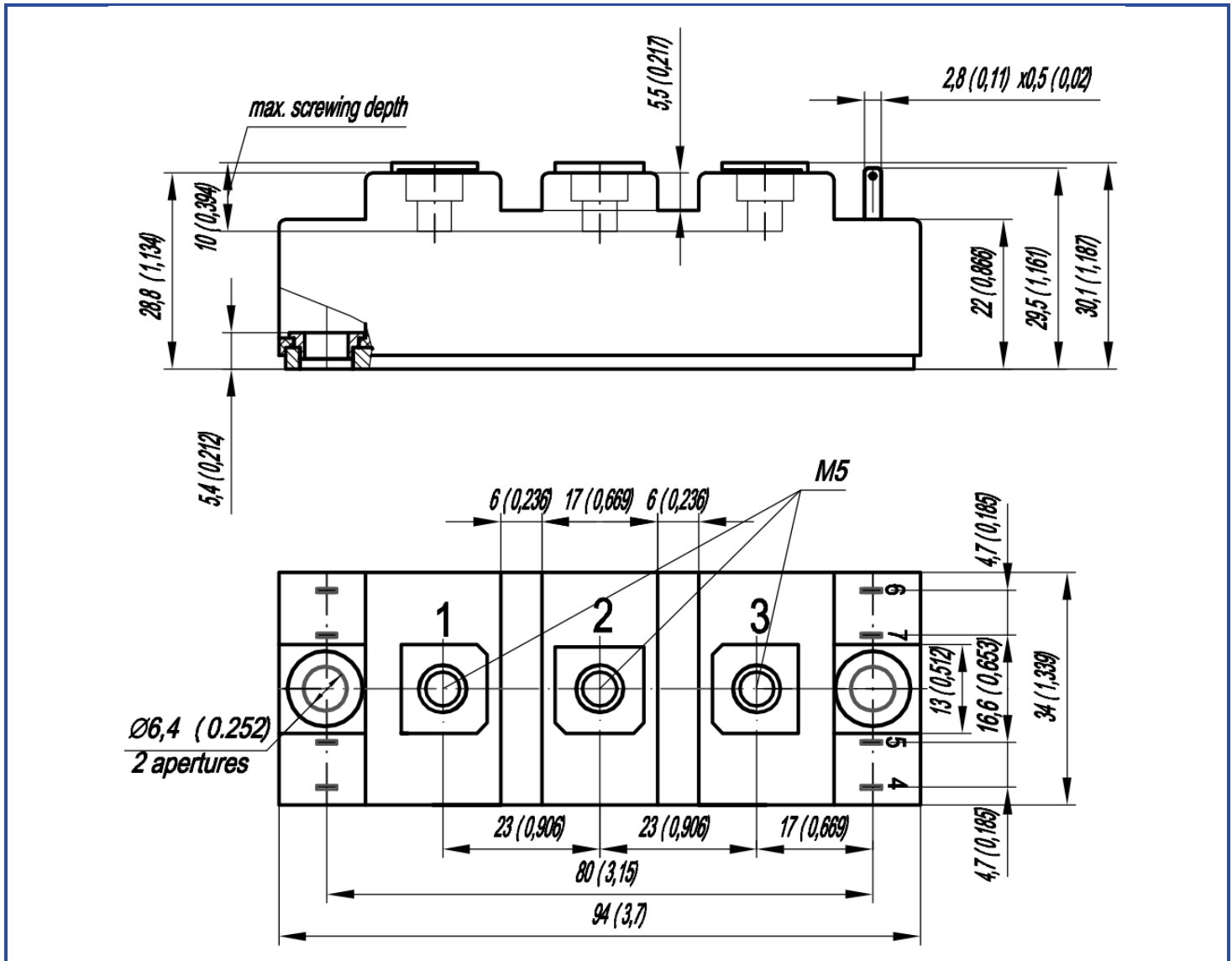
\*1 Pulse width and repetition rate should be such that device junction temperature ( $T_j$ ) does not exceed maximum  $T_j$  rating.

**Characteristics**

Definition	Symbol	Conditions	Value			Unit	
			min.	typ.	max.		
<b>IGBT</b>							
Collector-Emitter saturation voltage	$V_{CEsat}$ (chip)	$V_{GE} = 15V$ $I_C = 75A$	$T_J = 25^\circ C$	-	1.93	2.18	V
			$T_J = 150^\circ C$	-	2.28	2.50	V
	$V_{CEsat}$ (terminal)		$T_J = 25^\circ C$	-	2.00	2.30	V
			$T_J = 150^\circ C$	-	2.40	2.60	V
Gate-Emitter threshold voltage	$V_{GE(th)}$	$I_C = 3mA, V_{CE} = V_{GE}, T_J = 25^\circ C$	5.2	5.8	6.4	V	
Collector-Emitter cut-off current	$I_{CES}$	$V_{CE} = 1700V$ $V_{GE} = 0V$	$T_J = 25^\circ C$	-	-	1000	$\mu A$
			$T_J = 150^\circ C$	-	-	2000	$\mu A$
Gate-Emitter leakage current	$I_{GES}$	$V_{CE} = 0V, V_{GE} = \pm 20V$	-	-	600	nA	
Input capacitance	$C_{ies}$	$V_{CE} = 25V, V_{GE} = 0V$ $f = 1MHz, T_J = 25^\circ C$	-	6800	-	pF	
Output capacitance	$C_{oes}$		-	280	-	pF	
Reverse transfer capacitance	$C_{res}$		-	220	-	pF	
Total gate charge	$Q_G$	$I_C = 75A, V_{CE} = 1200V, V_{GE} = -8 \div 20V$	-	600	-	nC	
Internal gate resistance	$R_{Gint}$	$T_J = 25^\circ C$	-	10	-	$\Omega$	
Turn-on delay time	$t_{d(on)}$	$V_{CE} = 1200V, I_C = 750A,$ $R_G = 2.0\Omega, V_{GE} = \pm 15V,$ $di/dt_{on} = 2680 A/\mu S,$ $di/dt_{off} = 2480 A/\mu S,$ $du/dt_{off} = 5440 V/\mu S,$ $T_J = 150^\circ C.$	-	187	224	ns	
Rise time	$t_r$		-	29	35	ns	
Turn-on energy	$E_{on}$		-	30	36	mJ	
Turn-off delay time	$t_{d(off)}$		-	603	724	ns	
Fall time	$t_f$		-	140	168	ns	
Turn-off energy	$E_{off}$		-	29	35	mJ	
Short circuit duration	$t_{psc}$	$V_{cc} = 720V, V_{GE} \leq 20V,$ $T_J = 150^\circ C, \text{non-repetitive}$	-	-	10	$\mu s$	
Collector-emitter threshold voltage	$V_{CE0}$	$V_{GE} = 15V, T_J = 150^\circ C$	-	0.7	0.8	V	
On-State slope resistance (IGBT)	$r_{CE0}$	for static power loss calculation	-	21	24	m $\Omega$	
Thermal resistance junction to case	$R_{th(j-c)}$	per IGBT	-	-	0.3	K/W	
<b>Inverse diode / Freewheeling diode</b>							
Continuous forward voltage	$V_F$ (chip)	$I_F = 75A$	$T_J = 25^\circ C$	-	2.00	2.40	V
			$T_J = 150^\circ C$	-	2.15	2.55	V
	$V_F$ (terminal)		$T_J = 25^\circ C$	-	2.20	2.50	V
			$T_J = 150^\circ C$	-	2.25	2.60	V
Peak reverse recovery current	$I_{RM}$	$V_r = 1200V,$ $I_F = 75A,$ $di_F/dt = 2860$ $/\mu S.$	$T_J = 25^\circ C$	-	73	88	A
Reverse recovered charge	$Q_{rr}$		$T_J = 150^\circ C$	-	95	114	A
			$T_J = 25^\circ C$	-	14	17	$\mu C$
Reverse recovery energy	$E_{rr}$		$T_J = 150^\circ C$	-	27	32	$\mu C$
			$T_J = 25^\circ C$	-	10	11	mJ
$T_J = 150^\circ C$	-		21	25	mJ		
Forward threshold voltage (Diode)	$V_{F0}$	$T_J = 150^\circ C$	-	1.08	1.22	V	
On-state slope resistance (Diode)	$r_F$	for static power loss calculation	-	14	18	m $\Omega$	
Thermal resistance junction to case	$R_{th(j-c)}$		-	-	0.63	K/W	
<b>Module</b>							
Parasitic inductance Collector-Emitter	$L_{CE}$		-	30	-	nH	
Resistance terminal-chip	$R_{CC'}+R_{EE'}$	terminal-chip $T_J = 25^\circ C$	-	0.65	-	m $\Omega$	
Thermal resistance case to heatsink	$R_{thCH}$	per module	-	0.05	-	K/W	
Mounting torque for screws to heatsink	$M_s$	to heatsink M6	3	-	5	Nm	
Mounting torque for terminal screws	$M_t$	to terminals M5	2.5	-	5	Nm	
Weight	$W$		-	-	170	g	



Overall dimensions: Package type FA



Part numbering guide

MIFA	-	HB	17	FA	-	75	N	
MIFA								IGBT module package type: FA
		HB						2 switches as Half-Bridge
		HC						1 switch as High-Side chopper
		LC						1 switch as Low-Side chopper
			17					Voltage rating ( $V_{CES}/100$ )
				FA				IGBT+FRD chipset modification
						75		Current Rating
							N	Climatic version: normal climate

This datasheet is a tentative target data. The information in this document will be updated according to product qualification test results.

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