

# FCA150AC120

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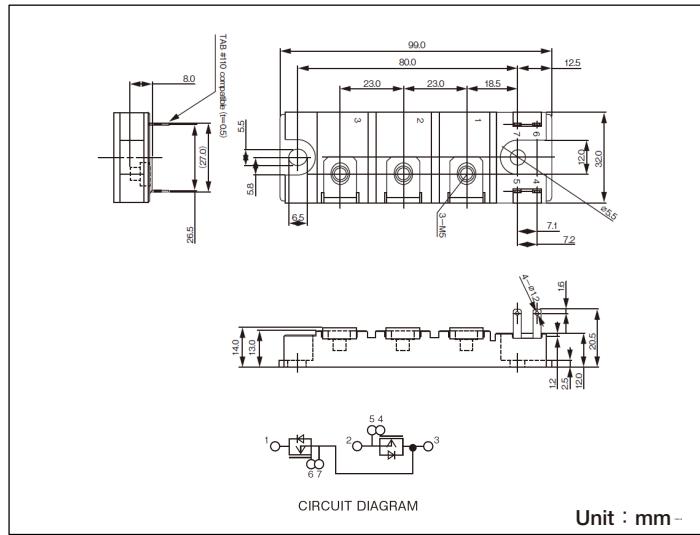
- 2in1 SiC MOSFET module
- Isolated module
- Integrated FWD function

## 『Features』

- Small size package
- High reliability
- Safe gate driving
- Short circuit tolerance
- Low power loss
- Low temperature dependency of RDS(on)
- Unnecessity of additional FWD

## 『Applications』

- Industrial inverters / DC-DC converters / EV chargers / Resonant power supply

■ Maximum Ratings ( $T_j=25^\circ\text{C}$  unless otherwise specified)

Item	Symbol	Unit	Ratings		Conditions
Drain-Source Voltage	$V_{DSS}$	V	1200		
Gate-Source Voltage(+)	$V_{GS}$	V	22		
Gate-Source Voltage(-)	$V_{GS}$	V	-7		
Continuous Drain Current	$I_D$	A	150	$V_{GS}=20\text{V}, T_c=90^\circ\text{C}$	
Continuous Source Current	$I_S$	A	150	$V_{GS}=-5\text{V}, T_c=90^\circ\text{C}$	
Total Power Dissipation	$P_{tot}$	W	1135	$T_c=25^\circ\text{C}$	
Operating Junction Temperature	$T_j$	°C	-40 to +150		
Storage Temperature	$T_{stg}$	°C	-40 to +125		
Isolation Voltage (RMS)	$V_{iso}$	V	2500	AC 60Hz 1 minute	
Mounting torque	Mounting M5	N·m	2.7	Recommended Value 1.5 to 2.5	
	Terminal M5		2.7	Recommended Value 1.5 to 2.5	
Mass	-	g	130	Typical value	

■ Electrical Characteristics ( $T_j=25^\circ\text{C}$  unless otherwise specified)

Item	Symbol	Unit	Ratings			Conditions
			Min.	Typ.	Max.	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V	1200			$V_{GS}=0\text{V}, I_D=300\mu\text{A}$
Static Drain-Source On-State Voltage	$V_{DS(on)}$	V	0.61	1.40	$V_{GS}=20\text{V}, I_D=150\text{A}$	
			0.67	1.50	$V_{GS}=20\text{V}, I_D=150\text{A}, T_j=150^\circ\text{C}$	
On-State Resistance	$R_{DS(on)}$	$\text{m}\Omega$	4.1	9.3	$V_{GS}=20\text{V}, I_D=150\text{A}$	
			4.5	10.0	$V_{GS}=20\text{V}, I_D=150\text{A}, T_j=150^\circ\text{C}$	
Drain Cutoff Current	$I_{DSS}$	$\mu\text{A}$		300	$V_{DS}=1200\text{V}, V_{GS}=0\text{V}$	
Gate-Source Threshold Voltage	$V_{GS(th)}$	V	3	4	5	$V_{DS}=10\text{V}, I_D=4.5\text{mA}$
Gate-Source Leakage Current	$I_{GSS}$	nA		300	$V_{GS}=20\text{V}, V_{DS}=0\text{V}$	
Switching Characteristics	$t_{d(on)}$	ns	66			$I_D=150\text{A}, V_{DS}=600\text{V}, V_{GS}=+20\text{V}/-5\text{V}, R_G=2.2\Omega, L=126\mu\text{H}$
	$t_r$	ns	36			
	$t_{d(off)}$	ns	114			
	$t_f$	ns	50			
Input Capacitance	$C_{iss}$	nF	25.3			$V_{DS}=20\text{V}, V_{GS}=0\text{V}, f=100\text{kHz}$
Output Capacitance	$C_{oss}$	nF	7.4			
Reverse Transfer Capacitance	$C_{rss}$	nF	1.1			
Source-Drain Voltage	$V_{SD}$	V	2.68	2.90	$V_{GS}=-5\text{V}, I_S=150\text{A}$	
			2.63	2.95	$V_{GS}=-5\text{V}, I_S=150\text{A}, T_j=150^\circ\text{C}$	
Diode Total Capacitive Charge	$Q_c$	nC	4000		$I_{SD}=150\text{A}, V_{DS}=600\text{V}, dI_{SD}/dt=3200\text{A}/\mu\text{s}, V_{GS}=-5\text{V}$	

■ Thermal Characteristics ( $T_j=25^\circ\text{C}$  unless otherwise specified)

Item	Symbol	Unit	Ratings			Conditions
			Min.	Typ.	Max.	
Thermal Resistance	$R_{th(j-c)}$	$^\circ\text{C}/\text{W}$			0.11	Junction to case (Per Leg)
Interface Thermal Resistance	$R_{th(c-f)}$	$^\circ\text{C}/\text{W}$		0.06		Case to Heat sink (Per Module) Thermal conductivity (Silicone grease) $= 9 \times 10^{-3} [\text{W}/\text{cm} \cdot ^\circ\text{C}]$

