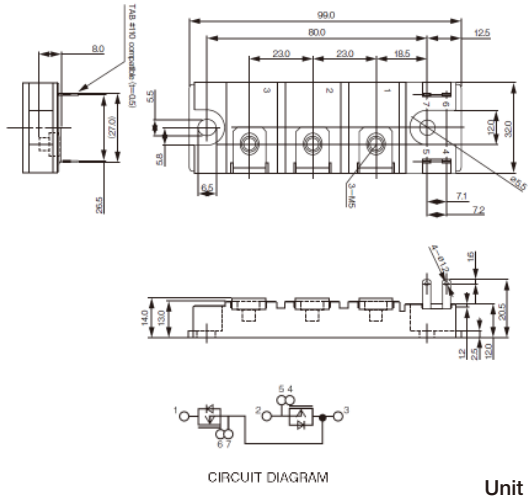
SiC MOSFET Module

FCA100AC120

FCA100AC120
- 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



Unit : mm

■ Maximum Ratings (Tj=25℃ unless otherwise specified)

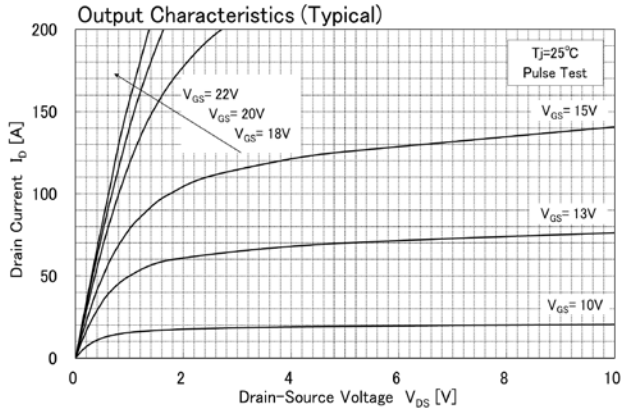
Item		Symbol	Unit	Ratings	Conditions
Drain-Source Voltage		V_{DSS}	V	1200	
Gate-Source Voltage(+)		V_{GSS}	V	22	
Gate-Source Voltage(−)			V	−7	
Continuous Drain Current		I_D	A	100	V_{GS}=20V, Tc=90℃
Continuous Source Current		I_S	A	100	V_{GS}=−5V, Tc=90℃
Total Power Dissipation		P_{tot}	W	625	T_C=25℃
Operating Junction Temperature		T_j	℃	−40 to +150	
Storage Temperature		T_{stg}	℃	−40 to +125	
Isolation Voltage (RMS)		V_{iso}	V	2500	AC 60Hz 1minute
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

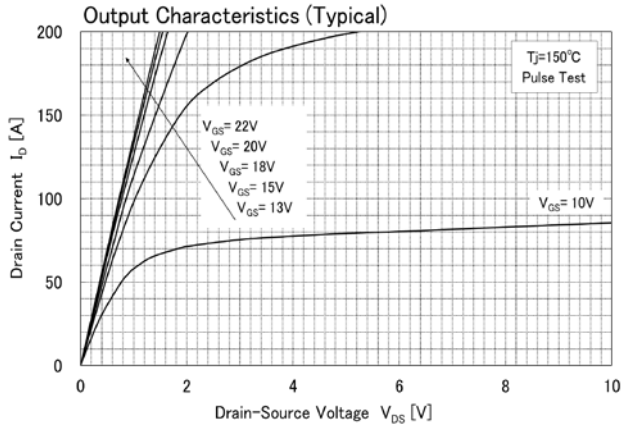
■ Electrical Characteristics (Tj=25℃ unless otherwise specified)

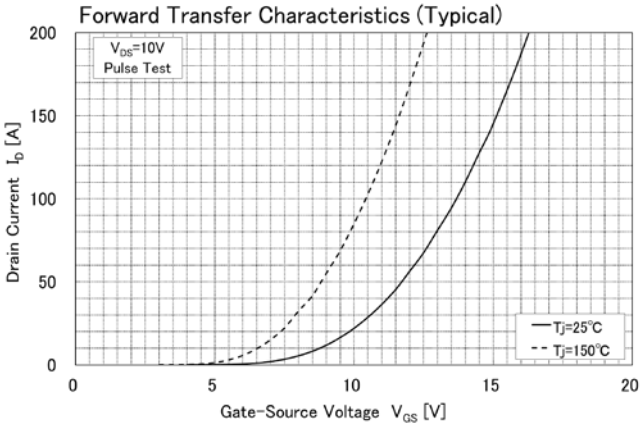
Item	Symbol	Unit	Ratings			Conditions
			Min.	Typ.	Max.	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V	1200			V_{GS}=0V, I_D=200μA
Static Drain-Source On-State Voltage	$V_{DS(on)}$	V		0.68	1.40	V_{GS}=20V, I_D=100A
				0.74	1.50	V_{GS}=20V, I_D=100A, T_j=150℃
On-State Resistance	$R_{DS(on)}$	mΩ		6.8	14.0	V_{GS}=20V, I_D=100A
				7.4	15.0	V_{GS}=20V, I_D=100A,T_j=150℃
Drain Cutoff Current	I_{DSS}	μA			200	V_{DS}=1200V, V_{GS}=0V
Gate-Source Threshold Voltage	$V_{GS(th)}$	V	3	4	5	V_{DS}=10V, I_D=3mA
Gate-Source Leakage Current	I_{GSS}	nA			200	V_{GS}=20V, V_{DS}=0V
Switching Characteristics	$t_{d(on)}$	ns		58		I_D=100A, V_{DS}=600V, V_{GS}=+20V/−5V, R_G=3.3Ω, L=126μH
	t_r	ns		33		
	$t_{d(off)}$	ns		121		
	t_f	ns		49		
Input Capacitance	C_{iss}	nF		17.2		V_{DS}=20V, V_{GS}=0V, f=100kHz
Output Capacitance	C_{oss}	nF		5.0		
Reverse Transfer Capacitance	C_{rss}	nF		0.6		
Source-Drain Voltage	V_{SD}	V		2.60	2.90	V_{GS}=−5V, I_S=100A
				2.62	2.95	V_{GS}=−5V, I_S=100A, T_j=150℃
Diode Total Capacitive Charge	Q_c	nC		2300		I_{SD}=100A, V_{DS}=600V, di_{SD}/dt=2400A/μs, V_{GS}=−5V

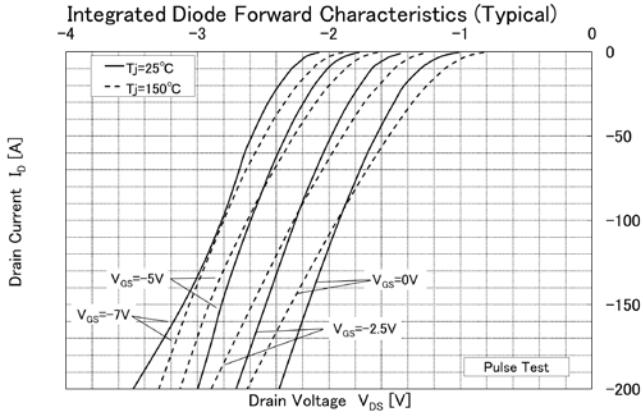
■Thermal Characteristics (Tj=25℃ unless otherwise specified)

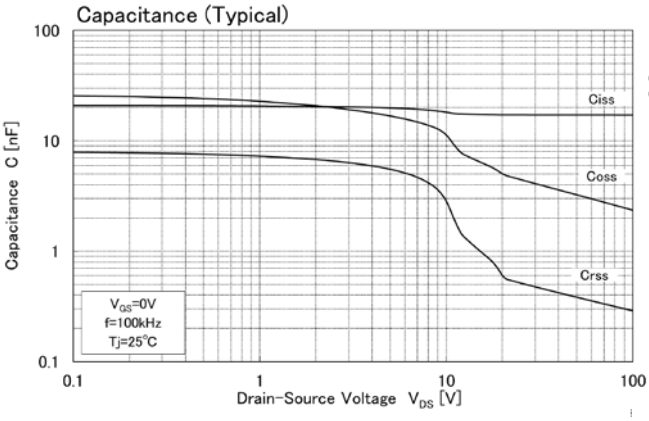
Item	Symbol	Unit	Ratings			Conditions
			Min.	Typ.	Max.	
Thermal Resistance	$R_{th(j-c)}$	℃/W			0.2	Junction to case (Per Leg)
Interface Thermal Resistance	$R_{th(c-f)}$	℃/W		0.06		Case to Heat sink (Per Module) Thermal conductivity (Silicone grease) $= 9 \times 10^{-3}$ [W/cm・℃]

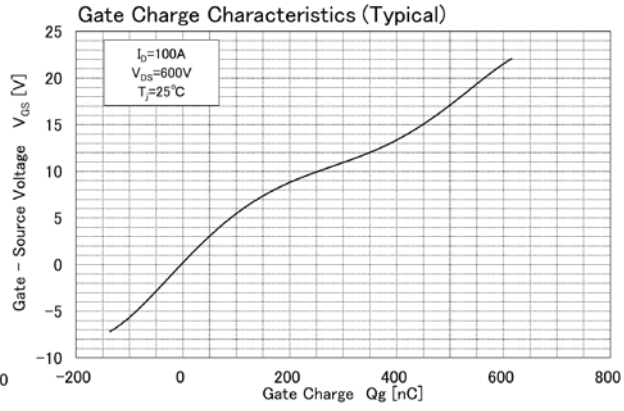




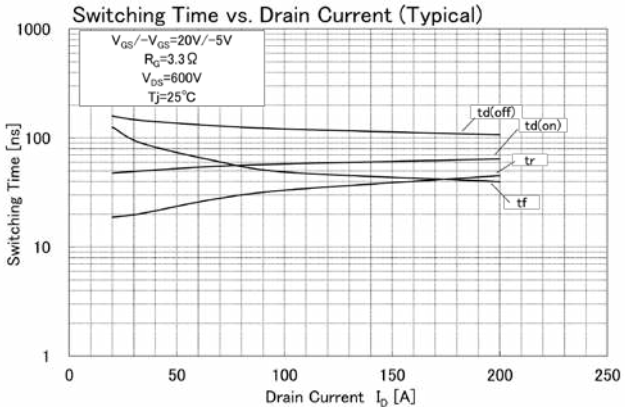








Switching Time vs. Drain Current (Typical)



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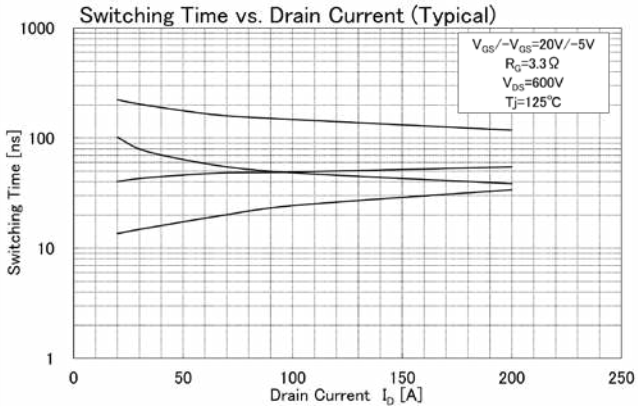
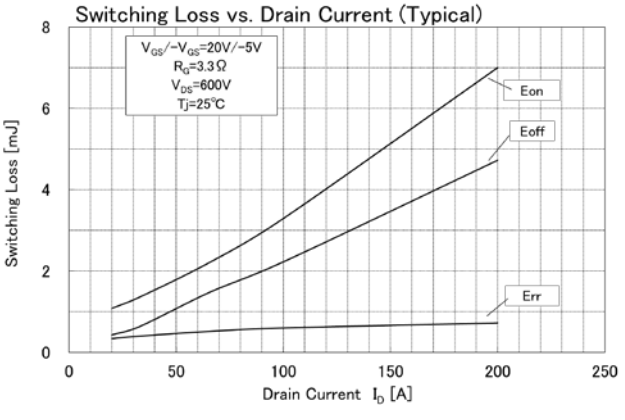


Switching Loss vs. Drain Current (Typical)



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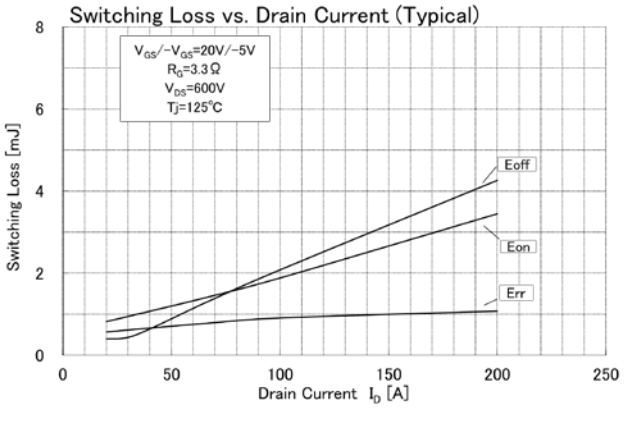
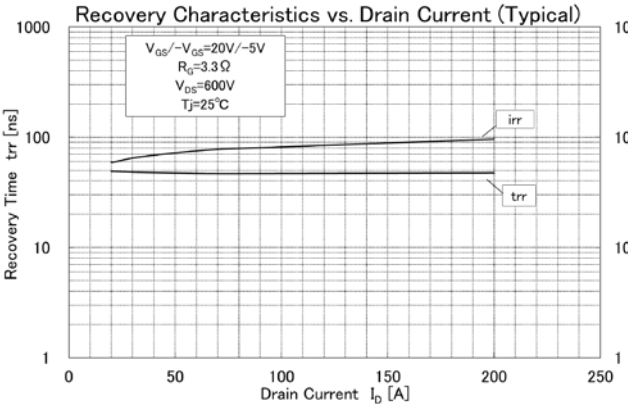


Recovery Characteristics vs. Drain Current (Typical)



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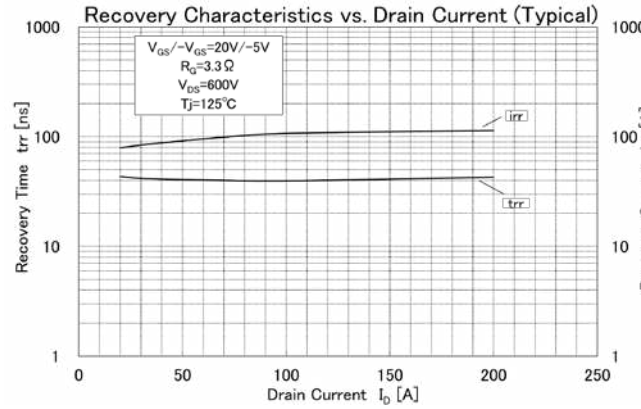

Transient Thermal Impedance