

MOSFET MODULE

FCA75CC50

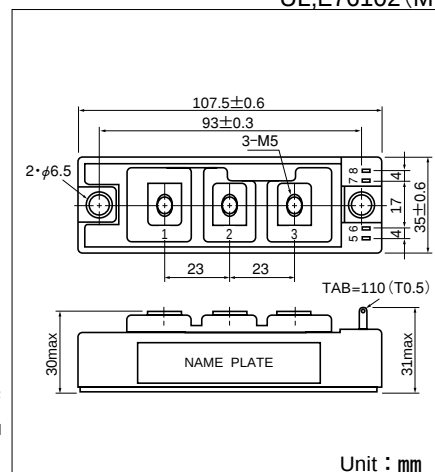
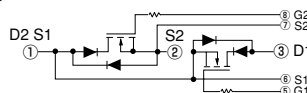
UL;E76102 (M)

FCA75CC50 is a dual power MOSFET module designed for fast switching applications of high voltage and current. (2 devices are serial connected with a fast recovery diode ($t_{rr} \leq 100\text{ns}$) reverse connected across each MOSFET.) The mounting base of the module is electrically isolated from semiconductor elements for simple heatsink construction.

- $I_D = 75\text{A}$, $V_{DS} = 500\text{V}$
- Suitable for high speed switching applications.
- Low ON resistance.
- Wide Safe Operating Areas.
- $t_{rr} \leq 100\text{ns}$ fast recovery diode for free wheel.

(Applications)

UPS (CVCF), Motor Control, Switching Power Supply, etc.



Maximum Ratings

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

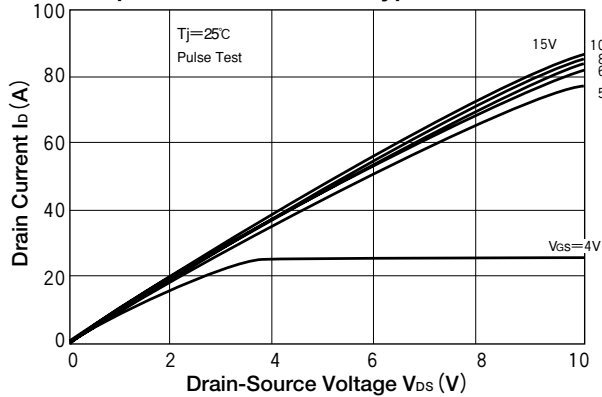
Symbol	Item		Conditions	Ratings	Unit
				FCA75CC50	
V_{DS}	Drain-Source Voltage			500	V
V_{GS}	Gate-Source Voltage			± 20	V
I_D	Drain Current	DC	Duty 35%	75	A
I_{DP}		Pulse		150	
$-I_D$	Source Current			75	A
P_T	Total Power Dissipation		$T_c = 25^\circ\text{C}$	430	W
T_j	Channel Temperature			-40 to $+150$	$^\circ\text{C}$
T_{stg}	Storage Temperature			-40 to $+125$	$^\circ\text{C}$
V_{iso}	Isolation Voltage (R.M.S.)		A.C. 1minute	2500	V
	Mounting Torque	Mounting (M6)	Recommended Value 2.5-3.9 (25-40)	4.7 (48)	N·m (kgf·cm)
		Terminal (M5)	Recommended Value 1.5-2.5 (15-25)	2.7 (28)	
	Mass		Typical Value	240	g

Electrical Characteristics

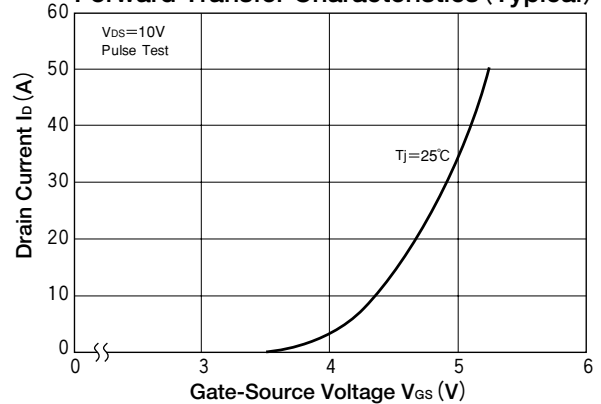
($T_j = 25^\circ\text{C}$)

Symbol	Item		Conditions	Ratings			Unit
				Min.	Typ.	Max.	
I_{GSS}	Gate Leakage Current		$V_{GS} = \pm 20\text{V}$, $V_{DS} = 0\text{V}$			± 1.0	μA
I_{DSS}	Zero Gate Voltage Drain Current		$V_{GS} = 0\text{V}$, $V_{DS} = 500\text{V}$			1.0	mA
$V_{(BR)/DSS}$	Drain-Source Breakdown Voltage		$V_{GS} = 0\text{V}$, $I_D = 1\text{mA}$	500			V
$V_{GS(th)}$	Gate-Source Threshold Voltage		$V_{DS} = V_{GS}$, $I_D = 10\text{mA}$	1.0		5.0	V
$R_{DS(on)}$	Drain-Source On-State Resistance		$I_D = 40\text{A}$, $V_{GS} = 15\text{V}$			110	m Ω
$V_{DS(on)}$	Drain-Source On-State Voltage		$I_D = 40\text{A}$, $V_{GS} = 15\text{V}$			4.4	V
g_{fs}	Forward Transconductance		$V_{DS} = 10\text{V}$, $I_D = 40\text{A}$		40		S
C_{iss}	Input Capacitance		$V_{GS} = 0\text{V}$, $V_{DS} = 25\text{V}$, $f = 1.0\text{MHz}$			13500	pF
C_{oss}	Output Capacitance		$V_{GS} = 0\text{V}$, $V_{DS} = 25\text{V}$, $f = 1.0\text{MHz}$			2500	pF
C_{rss}	Reverse Transfer Capacitance		$V_{GS} = 0\text{V}$, $V_{DS} = 25\text{V}$, $f = 1.0\text{MHz}$			1000	pF
$t_{d(on)}$	Switching Time	Turn-on Delay Time	$V_{DD} = 300\text{V}$, $V_{GS} = 15\text{V}$ $I_D = 40\text{A}$, $R_G = 5\Omega$		70		ns
t_r		Rise Time			140		
$t_{d(off)}$		Turn-off Delay Time			700		
t_f		Fall Time			210		
V_{SDS}	Diode Forward Voltage		$-I_S = 40\text{A}$, $V_{GS} = 0\text{V}$			2.5	V
t_{rr}	Reverse Recovery Time		$-I_S = 40\text{A}$, $V_{GS} = -5\text{V}$, $di/dt = 100\text{A}/\mu\text{s}$		80	100	ns
$R_{th(j-c)}$	Thermal Resistance		MOSFET			0.29	$^\circ\text{C}/\text{W}$
			Diode			1.67	

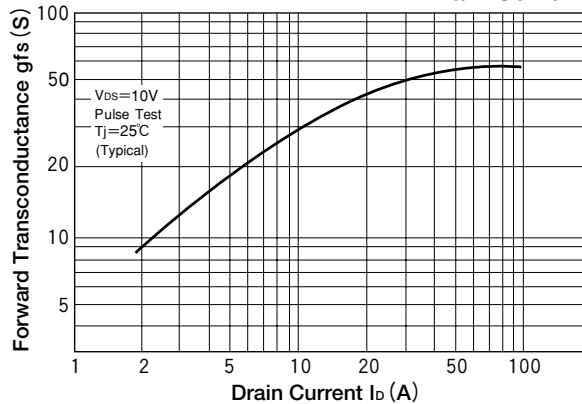
Output Characteristics (Typical)



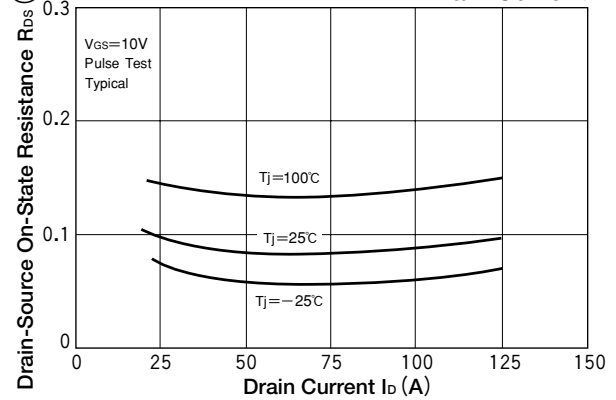
Forward Transfer Characteristics (Typical)



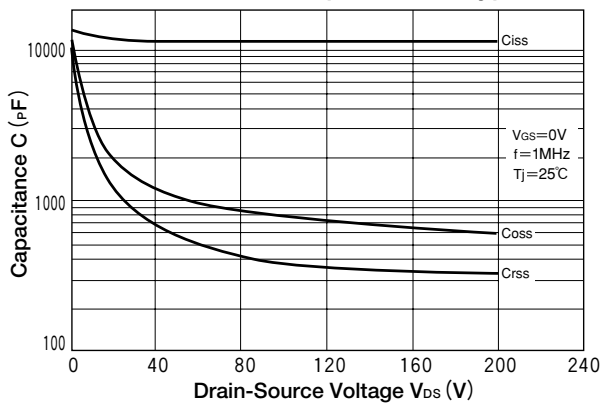
Forward Transconductance Vs. Drain Current



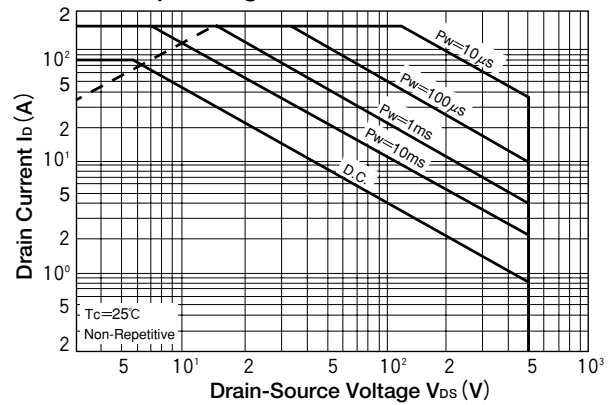
Drain-Source On-State Resistance Vs. Drain Current



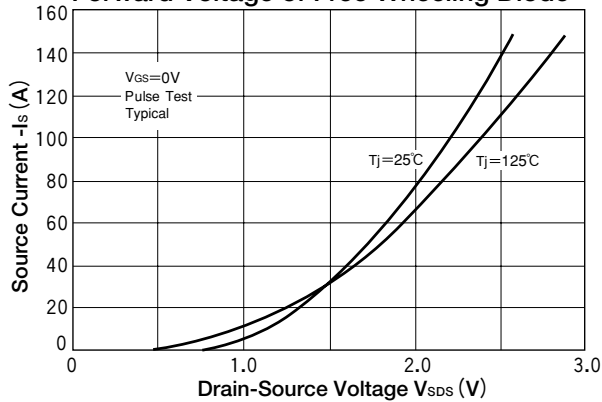
Input Capacitance, Output Capacitance, Reverse Transfer Capacitance (Typical)



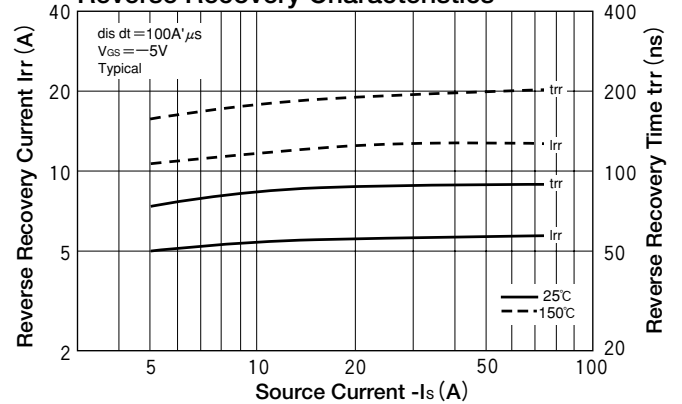
Safe Operating Area



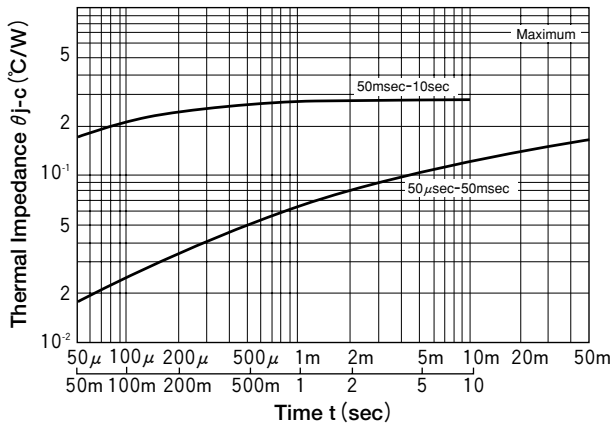
Forward Voltage of Free Wheeling Diode



Reverse Recovery Characteristics



Transient Thermal Impedance (MOSFET)



Transient Thermal Impedance (DIODE)

