

FM50DY-9,-10

MEDIUM POWER SWITCHING USE INSULATED TYPE

ELECTRICAL CHARACTERISTICS (T_{ch}=25°C)

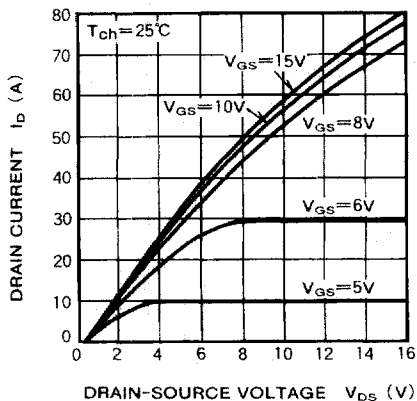
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I _{loss}	Drain current, with gate short circuit to source	V _{DS} =V _{DSS} , V _{GS} =0V	—	—	1	mA
		V _{DS} =0.8·V _{DSS} , V _{GS} =0V, T _{ch} =125°C	—	—	10	
V _{GS(th)}	Gate-source threshold voltage	I _D =1mA, V _{DS} =10V	2	3	4	V
±I _{GSS}	Gate leakage current	±V _{GS} =V _{GSS} , V _{DS} =0V	—	—	0.5	μA
r _{DS(on)}	Static drain-source on-state resistance	T _{ch} =25°C, I _D =50A	—	—	0.2	Ω
		T _{ch} =150°C, V _{GS} =15V (Note 3)	—	—	0.32	
V _{DS(on)}	Static drain-source on-state voltage	T _{ch} =25°C, I _D =50A	—	—	10	V
		T _{ch} =150°C, V _{GS} =15V (Note 3)	—	—	16	
y _{fs}	Forward transfer admittance	I _D =25A, V _{DS} =10V (Note 3)	10	—	—	S
C _{iss}	Input capacitance	V _{GS} =0V	—	—	9000	pF
C _{oss}	Output capacitance	V _{DS} =10V	—	—	2000	pF
C _{rss}	Reverse transfer capacitance	f=1MHz	—	—	700	pF
Q _G	Total gate charge	V _{DD} =300V, I _D =50A, V _{GS} =15V	—	600	—	nC
t _{on}	Turn-on time	V _{DD} =300V, I _D =25A, V _{GS} =+15V	—	—	500	ns
t _{off}	Turn-off time	R _{GEN} =R _{GS} =50Ω	—	—	1300	ns
t _{on}	Turn-on time	V _{DD} =300V, I _D =50A, V _{GS} =+10V	—	200	—	ns
t _{off}	Turn-off time	R _{G1} =R _{G2} =4.7Ω	—	175	—	ns
V _{SD} (Note 1)	Source-drain voltage	I _S =50A, V _{GS} =0V	—	—	2.5	V
t _{rr} (Note 1)	Reverse recovery time	I _S =50A, V _{GS} =0V	—	120	200	ns
Q _{rr}	Reverse recovery charge	dis/dt=−100A/μs	—	650	—	μC
R _{th(ch-c)}	Thermal resistance	MOSFET part, per a half module	—	—	0.41	°C/W
R _{th(j-c)}		Diode part, per a half module	—	—	1.3	°C/W
R _{th(c-f)}	Contact thermal resistance	Conductive grease applied, per a half module	—	—	0.13	°C/W

Note 1. I_S, V_{SD} & dis/dt represent characteristics of the anti-parallel, source to drain free-wheel diode of the MOSFET.

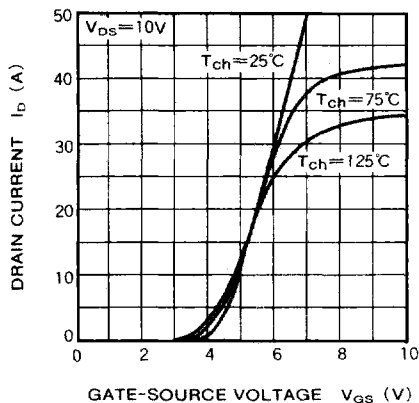
2. Pulse width and repetition rate should be such that the device channel temp. (T_{ch}) does not exceed T_{chmax} rating.
3. Pulse width and repetition rate should be such as to cause negligible temperature rise.

PERFORMANCE CURVES

OUTPUT CHARACTERISTICS
(TYPICAL)

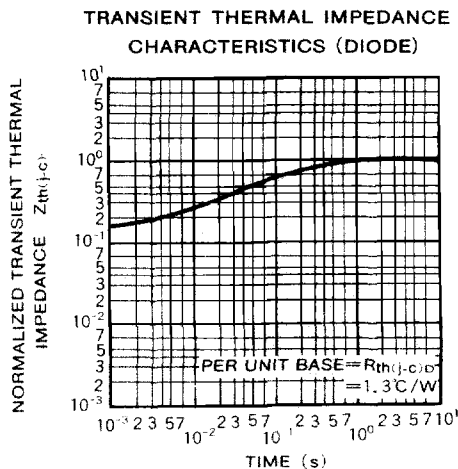
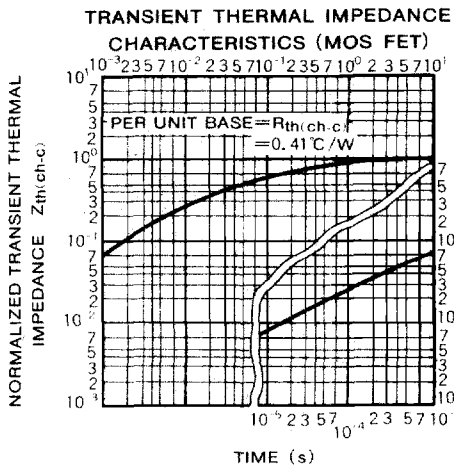
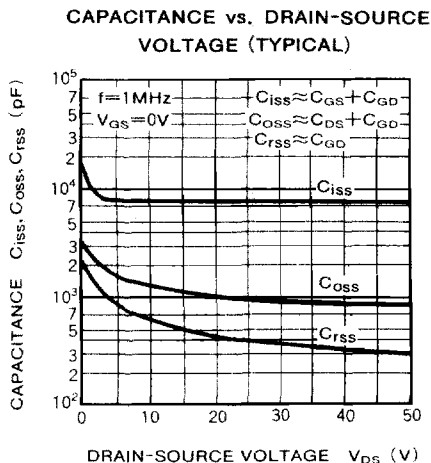
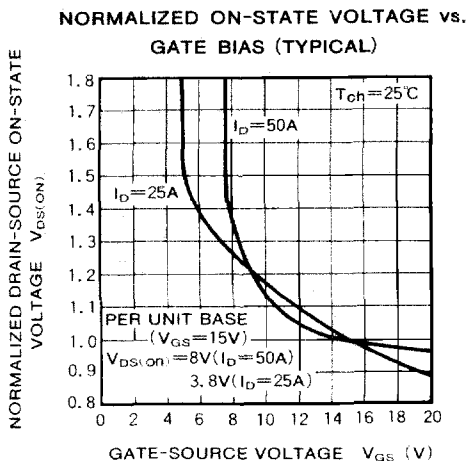
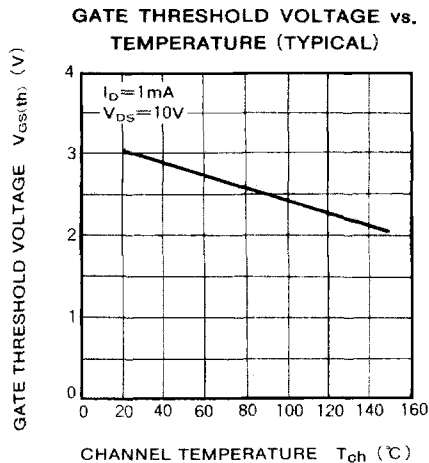
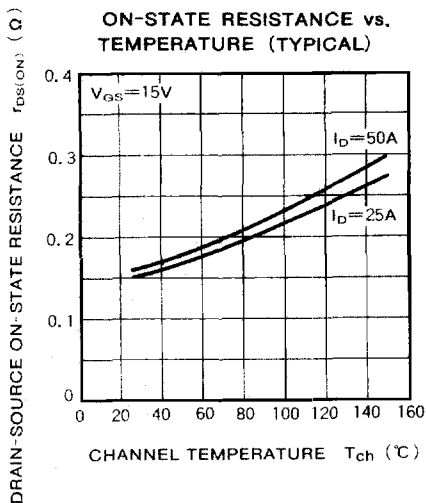


TRANSFER CHARACTERISTICS
(TYPICAL)



FM50DY-9,-10

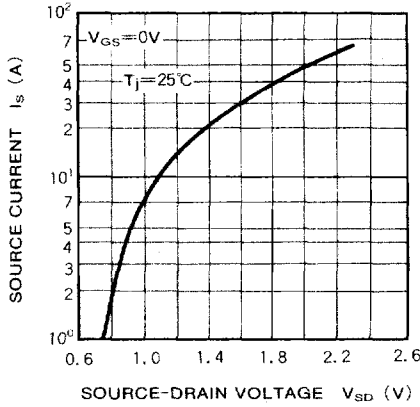
**MEDIUM POWER SWITCHING USE
INSULATED TYPE**



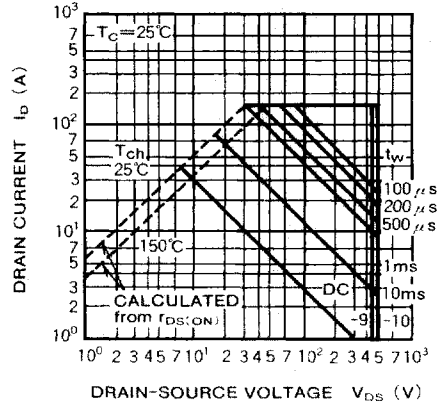
FM50DY-9,-10

MEDIUM POWER SWITCHING USE
INSULATED TYPE

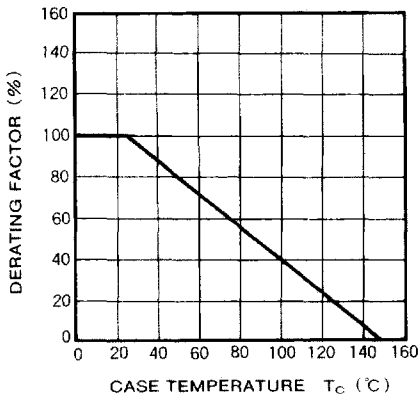
FREE-WHEEL DIODE FORWARD CHARACTERISTICS (TYPICAL)



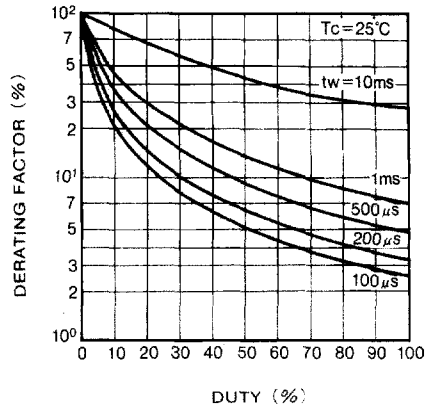
FORWARD BIAS SAFE OPERATING AREA



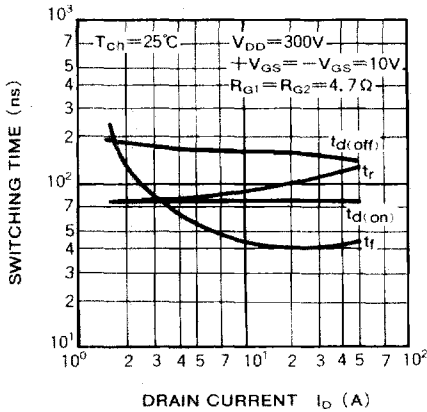
DERATING FACTOR OF S.O.A



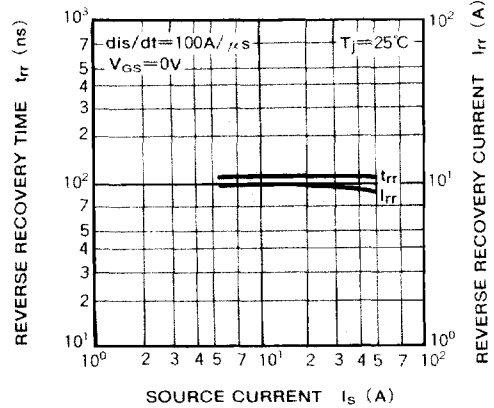
DERATING FACTOR OF S.O.A



SWITCHING CHARACTERISTICS (TYPICAL)



REVERSE RECOVERY CHARACTERISTICS (TYPICAL)



FM50DY-9,-10

MEDIUM POWER SWITCHING USE
INSULATED TYPE

