

TENTATIVE**FM600TU-3A**

HIGH POWER SWITCHING USE

ELECTRICAL CHARACTERISTICS ($T_{ch} = 25$)

Symbol	Item	Conditions	Min.	Typ.	Max.	Unit	
I_{DSS}	Drain cutoff current	$V_{DS}=V_{DSS}, V_{GS}= 0V$			1	mA	
$V_{GS(th)}$	Gate-source threshold voltage	$I_D=30mA, V_{DS}= 10V$	4.7	6	7.3	V	
I_{GSS}	Gate leakage current	$V_{GS}=V_{GSS}, V_{DS}= 0V$	-	-	1.5	μA	
$r_{DS(ON)}$ (chip)	Static drain-source On-state resistance	$I_D=300A$ $V_{GS}=15V$	$T_{ch}= 25$	-	1.6	2.2	m
			$T_{ch}=125$	-	3.0	-	
$V_{DS(ON)}$ (chip)	Static drain-source On-state voltage	$I_D=300A$ $V_{GS}=15V$	$T_{ch}= 25$	-	0.48	0.66	V
			$T_{ch}=125$	-	0.91	-	
$R_{(lead)}$	Lead resistance	$I_D=300A$ terminal-chip	$T_{ch}= 25$	-	0.7	-	m
			$T_{ch}=125$	-	1.0	-	
C_{iss}	Input capacitance	$V_{DS}= 10V$ $V_{GS}= 0V$	-	-	110	nF	
C_{oss}	Output capacitance		-	-	15		
C_{riss}	Reverse transfer capacitance		-	-	10		
Q_G	Total gate charge	$V_{DD}=80V, I_D=300A, V_{GS}=15V$	-	1950	-	nC	
$t_{d(on)}$	Turn-on delay time	$V_{DD} = 80V, I_D = 300A$ $V_{GS1}=V_{GS2} = 15V$ $R_G = 4.2$, Inductive load switching operation $I_S = 300A$	-	-	400	ns	
t_r	Turn-on rise time		-	-	400		
$t_{d(off)}$	Turn-off delay time		-	-	500		
t_f	Turn-off fall time		-	-	200	ns	
t_{rr}	Reverse recovery time		-	-	200		
Q_{rr}	Reverse recovery charge	-	8.0	-	μC		
V_{SD}	Source-drain voltage	$I_S = 300A, V_{GS} = 0V$	-	-	1.3	V	
$R_{th(ch-c)}$	Thermal resistance	MOSFET part(1/6 module)	-	-	0.13	/W	
$R_{th(ch-c')}$		MOSFET part(1/6 module)	-	-	0.096 ^{*1}		
$R_{th(c-f)}$	Contact thermal resistance	Case to fin,Thermal compound Applied ^{*2} (1/6 module)	-	0.1	-		

Thermistors part

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
R_{TH}	Resistance	$T_C=25$	-	100	-	k
B	B Constant	Resistance at 25 ,50	-	4000	-	K

I_S, V_{SD}, t_{rr} & Q_{rr} represent characteristics of the anti-parallel, source to drain free-wheel diode (FWD).
Pulse width and repetition rate should be such that the device channel temp. (T_{ch}) dose not exceed T_{ch} max rating.

Channel temperature (T_{ch}) should not increase beyond 150 .

$B = (\ln R_1 - \ln R_2) / (1/T_1 - 1/T_2)$ R_1 : Resistance at $T_1(K)$, R_2 : Resistance at $T_2(K)$

*1: T_c' measured point is just under the chips. If you use this value , $R_{th}(f-a)$ should be measured just under the chips.

*2: Typical value is measured by using Shin-etsu Silicone "G-746".

*3: T_c measured point is shown in page "3-4".

Keep safety first in your circuit designs!

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