

**PRELIMINARY**  
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 Some parametric limits are subject to change.

MITSUBISHI POWER MOSFET

# FL20KM-5A

HIGH-SPEED SWITCHING USE  
 Nch POWER MOSFET

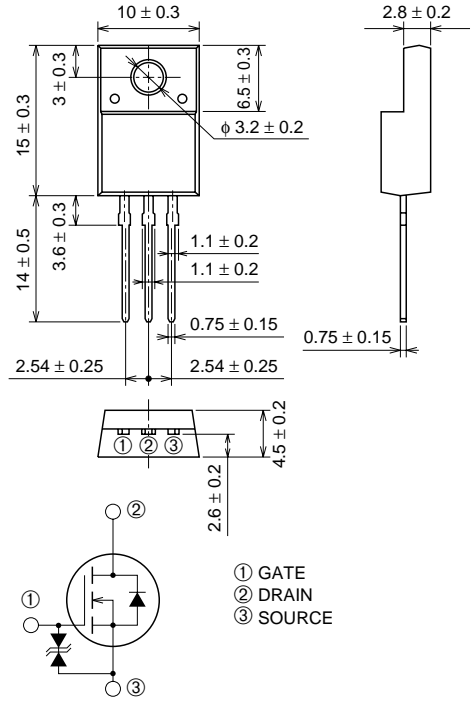
## FL20KM-5A



- 10V DRIVE
- V<sub>DSS</sub> ..... 250V
- r<sub>DS(ON)</sub> (MAX) ..... 0.19Ω
- I<sub>D</sub> ..... 20A
- V<sub>iso</sub> ..... 2000V

## OUTLINE DRAWING

Dimensions in mm



TO-220FN

## APPLICATION

Inverter type fluorescent light sets, SMPS

## MAXIMUM RATINGS (T<sub>c</sub> = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
V <sub>DSS</sub>	Drain-source voltage	V <sub>GS</sub> = 0V	250	V
V <sub>GSS</sub>	Gate-source voltage	V <sub>DS</sub> = 0V	±30	V
I <sub>D</sub>	Drain current		20	A
I <sub>DM</sub>	Drain current (Pulsed)		60	A
I <sub>DA</sub>	Avalanche current (Pulsed)	L = 200μH	20	A
P <sub>D</sub>	Maximum power dissipation		35	W
T <sub>ch</sub>	Channel temperature		-55 ~ +150	°C
T <sub>stg</sub>	Storage temperature		-55 ~ +150	°C
V <sub>iso</sub>	Isolation voltage	AC for 1minute, Terminal to case	2000	V
—	Weight	Typical value	2.0	g

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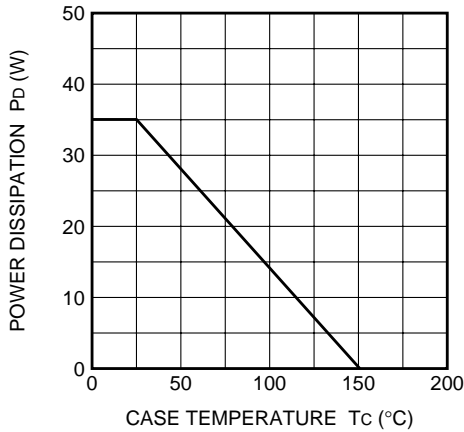
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**ELECTRICAL CHARACTERISTICS** (Tch = 25°C)

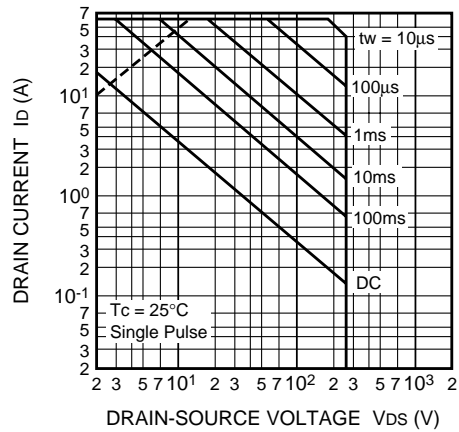
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V (BR) DSS	Drain-source breakdown voltage	Id = 1mA, VGS = 0V	250	—	—	V
V (BR) GSS	Gate-source breakdown voltage	IGS = ±100μA, VDS = 0V	±30	—	—	V
IGSS	Gate-source leakage current	VGS = ±30V, VDS = 0V	—	—	±10	μA
IDSS	Drain-source leakage current	VDS = 250V, VGS = 0V	—	—	1.0	mA
VGS (th)	Gate-source threshold voltage	Id = 1mA, VDS = 10V	2.0	3.0	4.0	V
rDS (ON)	Drain-source on-state resistance	Id = 10A, VGS = 10V	—	0.15	0.19	Ω
VDS (ON)	Drain-source on-state voltage	Id = 10A, VGS = 10V	—	1.50	1.90	V
yfs	Forward transfer admittance	Id = 10A, VDS = 10V	—	12	—	S
Ciss	Input capacitance	VDS = 25V, VGS = 0V, f = 1MHz	—	1300	—	pF
Coss	Output capacitance		—	250	—	pF
Crss	Reverse transfer capacitance		—	40	—	pF
td (on)	Turn-on delay time	VDD = 150V, Id = 10A, VGS = 10V, RGEN = RGS = 50Ω	—	25	—	ns
tr	Rise time		—	50	—	ns
td (off)	Turn-off delay time		—	200	—	ns
tf	Fall time		—	80	—	ns
VSD	Source-drain voltage	IS = 10A, VGS = 0V	—	1.5	2.0	V
Rth (ch-c)	Thermal resistance	Channel to case	—	—	3.57	°C/W
Trr	Reverse recovery time	IS = 20A, VGS = 0V, dis/dt = -100A/μs	—	300	—	ns

**PERFORMANCE CURVES**

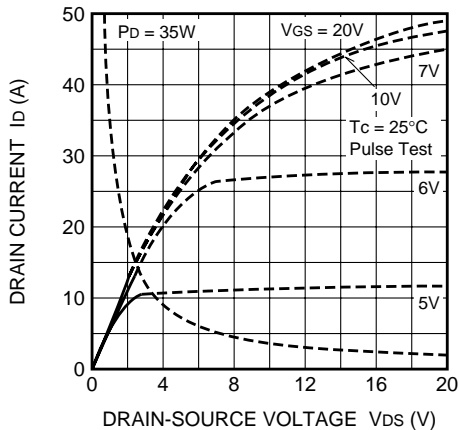
**POWER DISSIPATION DERATING CURVE**



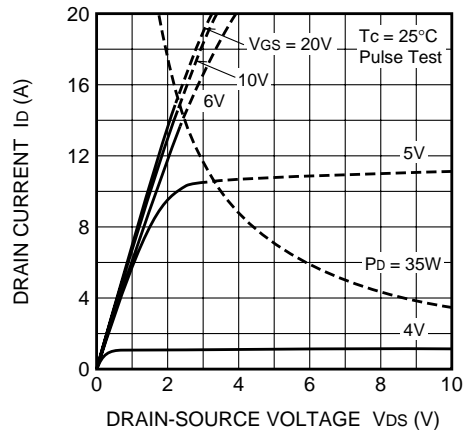
**MAXIMUM SAFE OPERATING AREA**



**OUTPUT CHARACTERISTICS (TYPICAL)**



**OUTPUT CHARACTERISTICS (TYPICAL)**

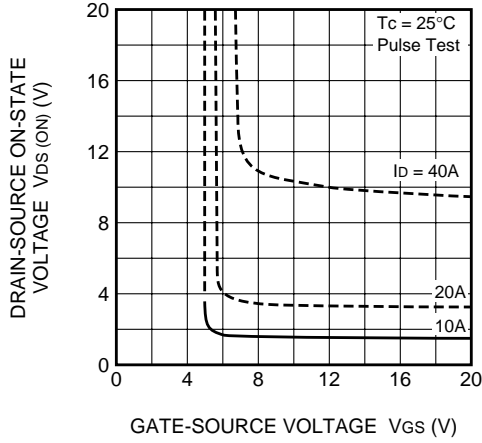


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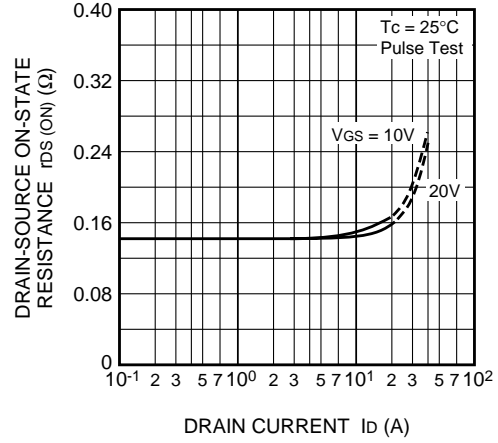
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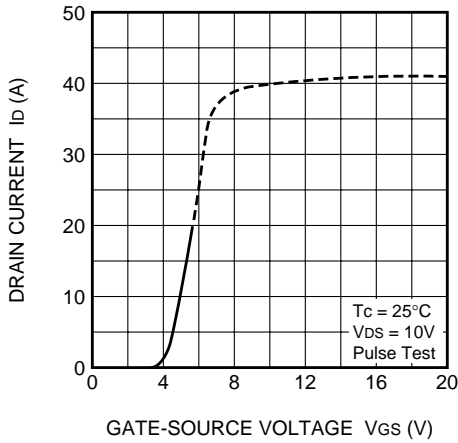
**ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)**



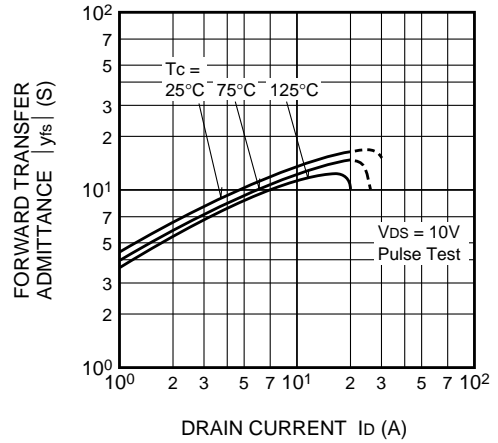
**ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)**



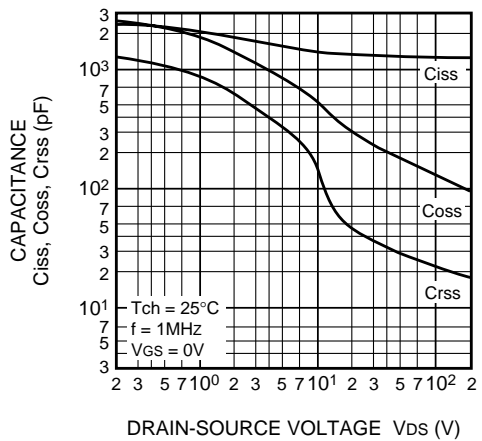
**TRANSFER CHARACTERISTICS (TYPICAL)**



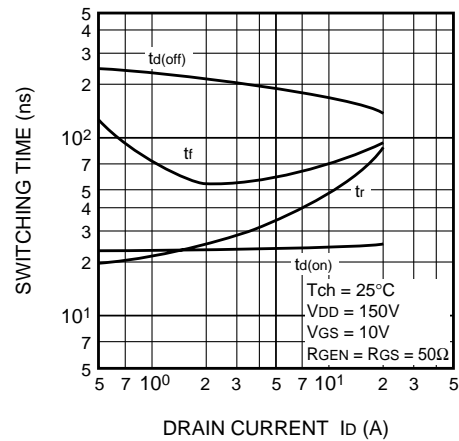
**FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)**



**CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)**



**SWITCHING CHARACTERISTICS (TYPICAL)**

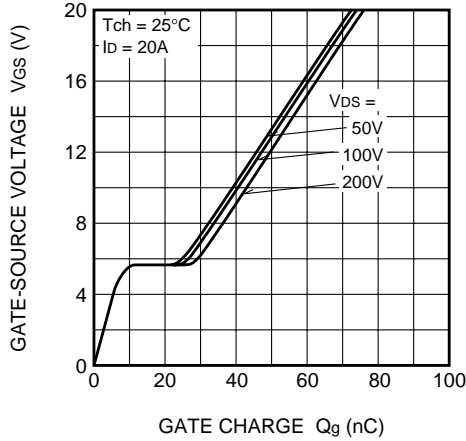


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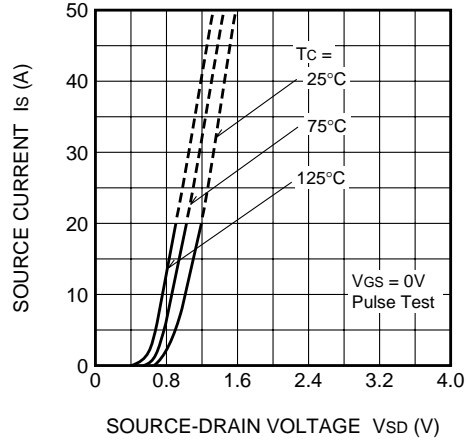
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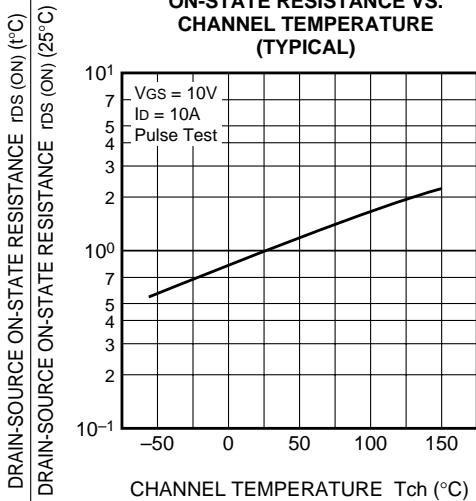
**GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)**



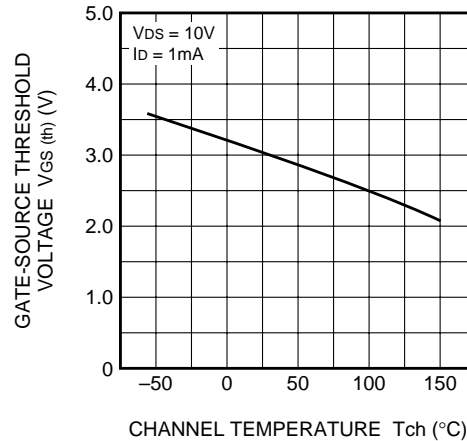
**SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)**



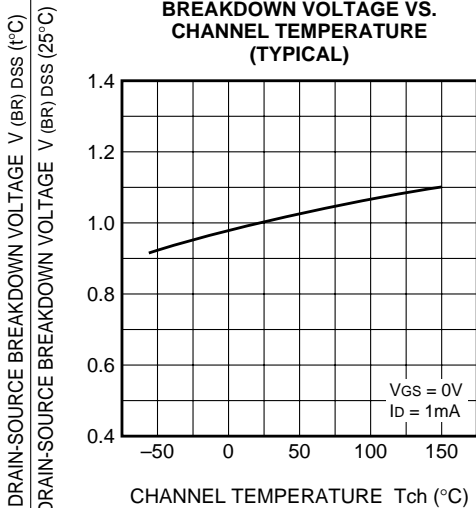
**ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)**



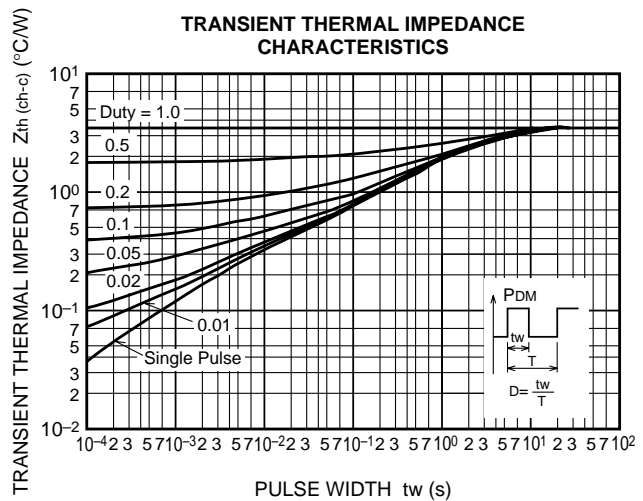
**THRESHOLD VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)**



**BREAKDOWN VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)**



**TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS**



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