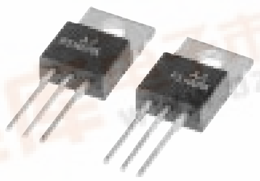
MITSUBISHI Nch POWER MOSFET

FS10UMA-5A

HIGH-SPEED SWITCHING USE

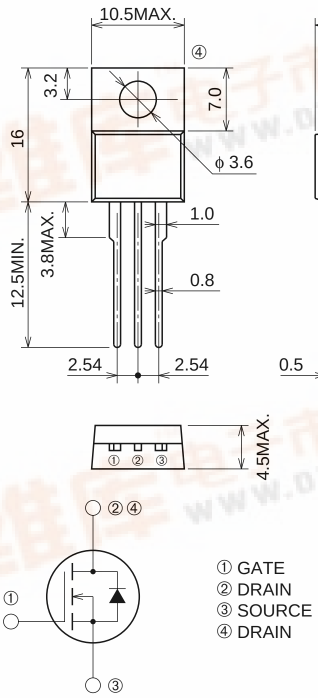
PRELIMINARY
Notice: This is not a final specification.
Some parametric limits are subject to change.

FS10UMA-5A



- ● 10V DRIVE
- ● VDSS 250V
- ● rDS (ON) (MAX) 0.52Ω
- ● ID 10A

OUTLINE DRAWING Dimensions in mm



TO-220

APPLICATION

Cs Switch for CRT Display monitor

MAXIMUM RATINGS (Tc = 25°C)

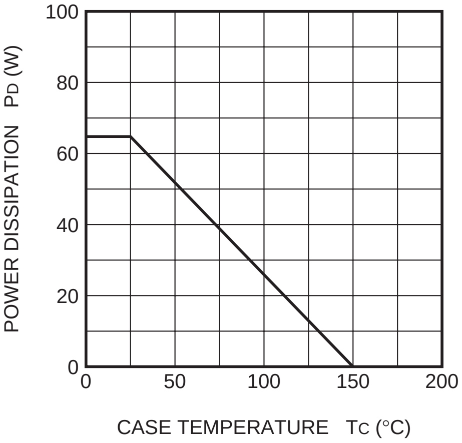
Symbol	Parameter	Conditions	Ratings	Unit
VDSS	Drain-source voltage	VGS = 0V	250	V
VGSS	Gate-source voltage	VDS = 0V	±20	V
ID	Drain current		10	A
IDM	Drain current (Pulsed)		30	A
IDA	Avalanche current (Pulsed)	L = 200µH	10	A
PD	Maximum power dissipation		65	W
Tch	Channel temperature		–55 ~ +150	°C
Tstg	Storage temperature		–55 ~ +150	°C
—	Weight	Typical value	2.0	g

ELECTRICAL CHARACTERISTICS (Tch = 25°C)

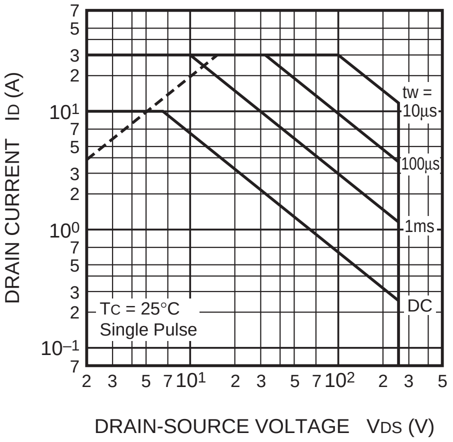
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
$V_{(BR)DSS}$	Drain-source breakdown voltage	I_D = 1mA, V_{GS} = 0V	250	—	—	V
I_{GSS}	Gate-source leakage current	V_{GS} = ±20V, V_{DS} = 0V	—	—	±0.1	µA
I_{DSS}	Drain-source leakage current	V_{DS} = 250V, V_{GS} = 0V	—	—	1	mA
$V_{GS(th)}$	Gate-source threshold voltage	I_D = 1mA, V_{DS} = 10V	2.0	3.0	4.0	V
$r_{DS(ON)}$	Drain-source on-state resistance	I_D = 5A, V_{GS} = 10V	—	0.40	0.52	Ω
$V_{DS(ON)}$	Drain-source on-state voltage	I_D = 5A, V_{GS} = 10V	—	2.00	2.60	V
$\lvert y_{fs} \rvert$	Forward transfer admittance	I_D = 5A, V_{DS} = 10V	—	9.0	—	S
C_{iss}	Input capacitance	V_{DS} = 25V, V_{GS} = 0V, f = 1MHz	—	950	—	pF
C_{oss}	Output capacitance		—	90	—	pF
C_{rss}	Reverse transfer capacitance		—	25	—	pF
$t_{d(on)}$	Turn-on delay time	V_{DD} = 150V, I_D = 5A, V_{GS} = 10V, R_{GEN} = R_{GS} = 50Ω	—	20	—	ns
t_r	Rise time		—	25	—	ns
$t_{d(off)}$	Turn-off delay time		—	150	—	ns
t_f	Fall time		—	40	—	ns
V_{SD}	Source-drain voltage	I_S = 5A, V_{GS} = 0V	—	1.5	2.0	V
$R_{th(ch-c)}$	Thermal resistance	Channel to case	—	—	1.92	°C/W

PERFORMANCE CURVES

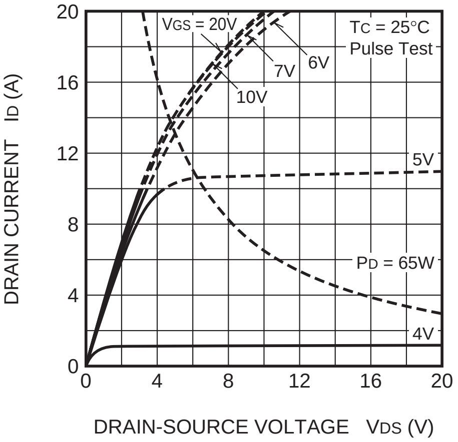
POWER DISSIPATION DERATING CURVE



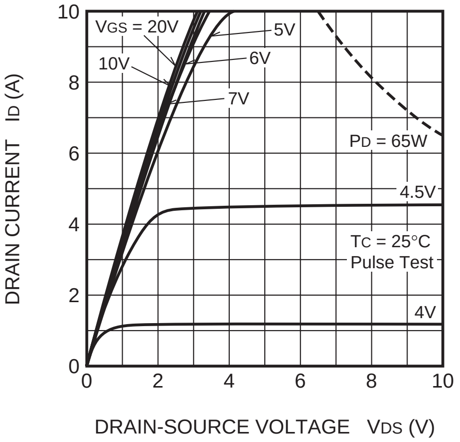
MAXIMUM SAFE OPERATING AREA



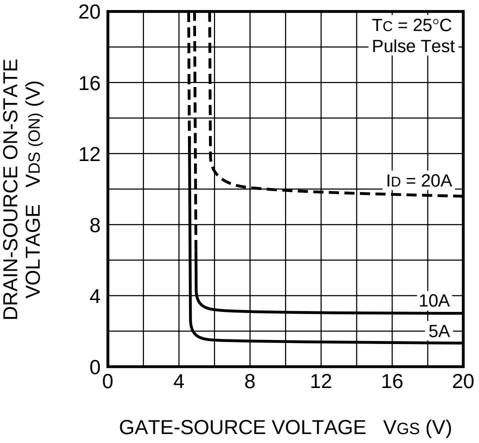
OUTPUT CHARACTERISTICS (TYPICAL)



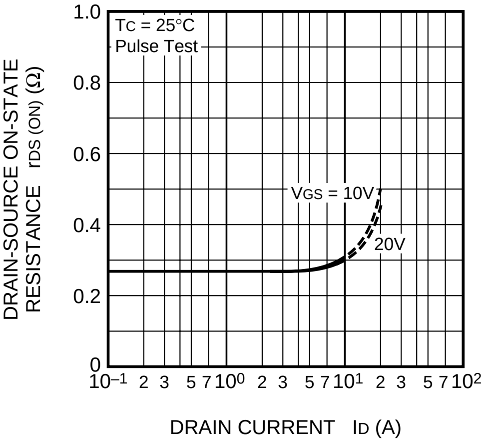
OUTPUT CHARACTERISTICS (TYPICAL)



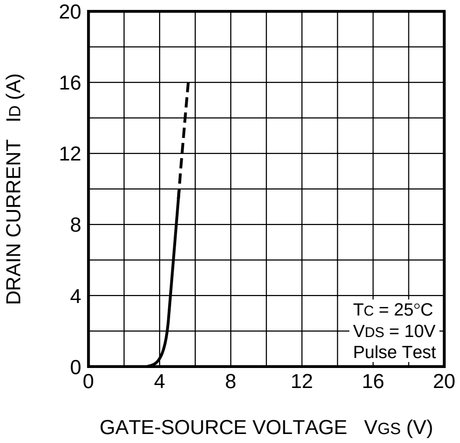
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



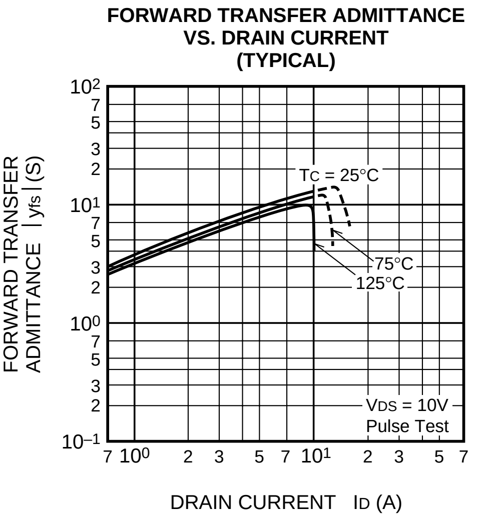
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



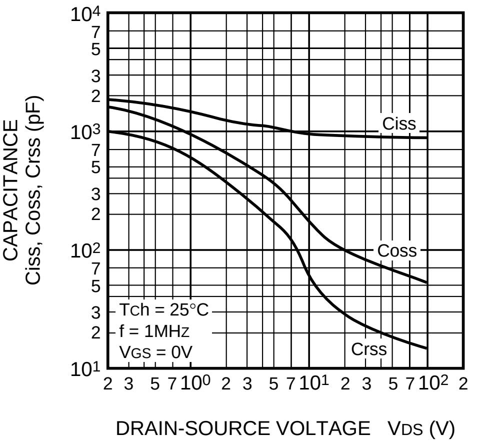
TRANSFER CHARACTERISTICS (TYPICAL)



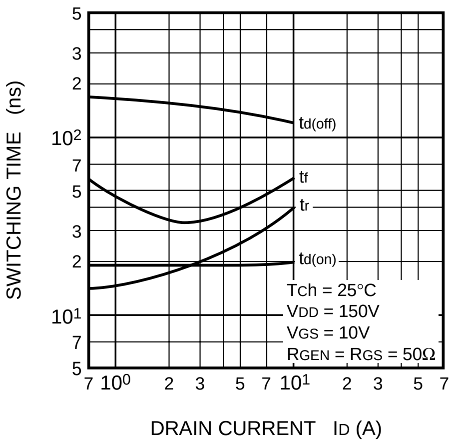
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



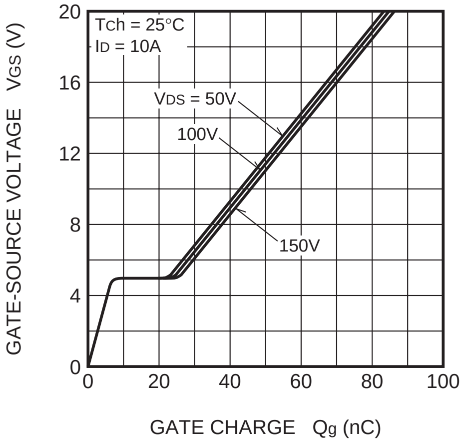
CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)



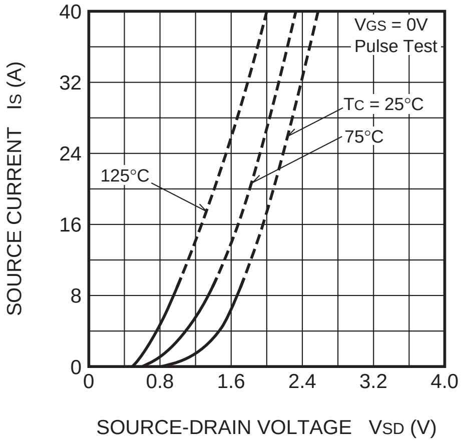
SWITCHING CHARACTERISTICS (TYPICAL)



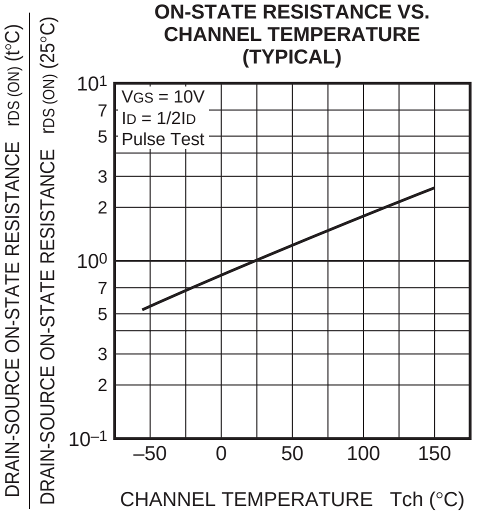
GATE-SOURCE VOLTAGE
VS. GATE CHARGE
(TYPICAL)



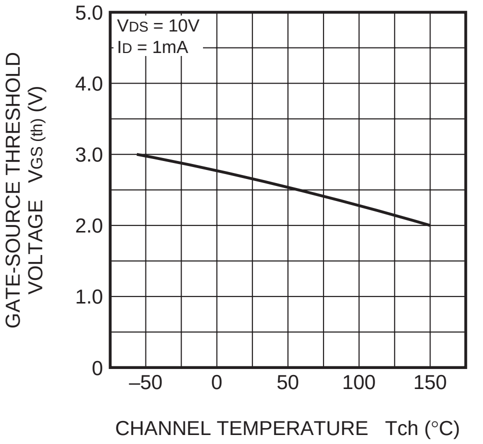
SOURCE-DRAIN DIODE
FORWARD CHARACTERISTICS
(TYPICAL)



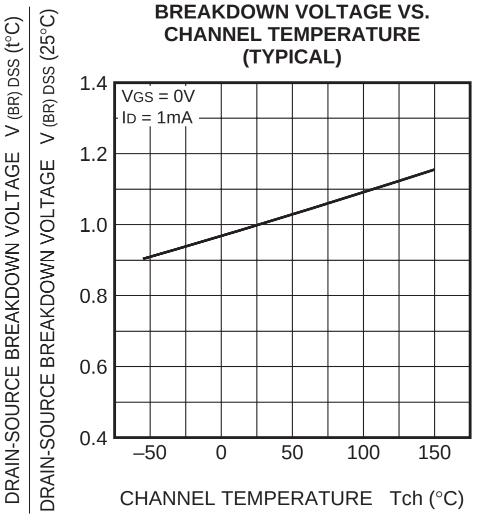
ON-STATE RESISTANCE VS.
CHANNEL TEMPERATURE
(TYPICAL)



THRESHOLD VOLTAGE VS.
CHANNEL TEMPERATURE
(TYPICAL)



BREAKDOWN VOLTAGE VS.
CHANNEL TEMPERATURE
(TYPICAL)



TRANSIENT THERMAL IMPEDANCE
CHARACTERISTICS