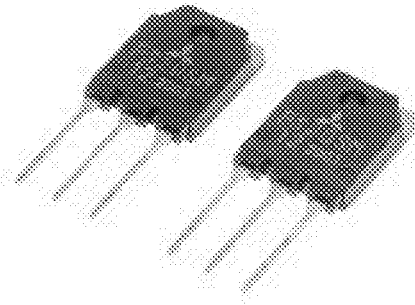


FS20SM-12

HIGH-SPEED SWITCHING USE

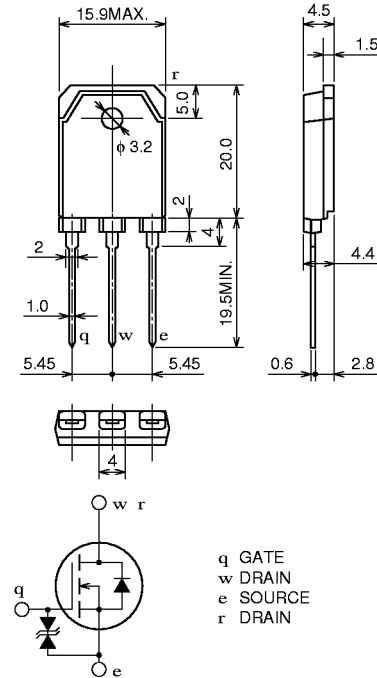
FS20SM-12



ˆ V _{DSS}	600V
ˆ r _{DS (ON)} (MAX)	0.43Ω
ˆ I _D	20A

OUTLINE DRAWING

Dimensions in mm



TO-3P

APPLICATION

SMPS, DC-DC Converter, battery charger, power supply of printer, copier, HDD, FDD, TV, VCR, personal computer etc.

MAXIMUM RATINGS (T_c = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
V _{DSS}	Drain-source voltage	V _{GS} = 0V	600	V
V _{GSS}	Gate-source voltage	V _{DS} = 0V	±30	V
I _D	Drain current		20	A
I _{DM}	Drain current (Pulsed)		60	A
P _D	Maximum power dissipation		275	W
T _{ch}	Channel temperature		-55 ~ +150	°C
T _{stg}	Storage temperature		-55 ~ +150	°C
—	Weight	Typical value	4.8	g

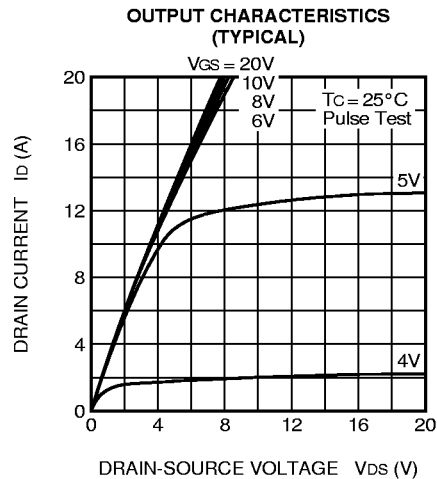
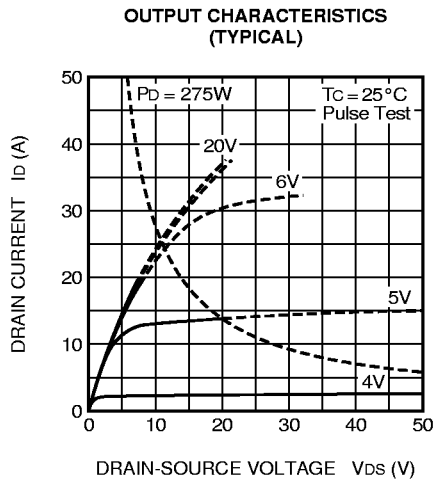
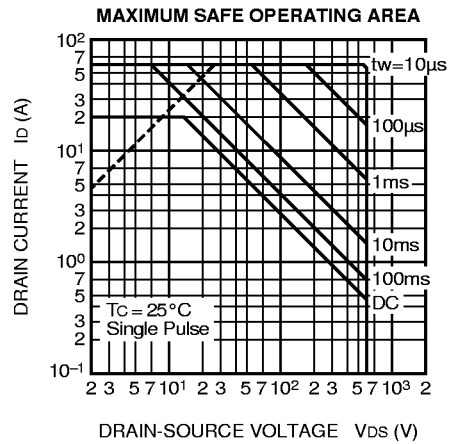
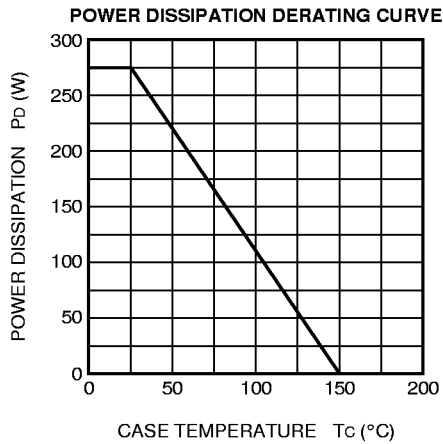
FS20SM-12

HIGH-SPEED SWITCHING USE

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

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V _{(BR) DSS}	Drain-source breakdown voltage	I _D = 1 mA, V _{GS} = 0 V	600	—	—	V
V _{(BR) GSS}	Gate-source breakdown voltage	I _G = ±100 μA, V _{DS} = 0 V	±30	—	—	V
I _{GSS}	Gate-source leakage current	V _{GS} = ±25 V, V _{DS} = 0 V	—	—	±10	μA
I _{DSS}	Drain-source leakage current	V _{DS} = 600 V, V _{GS} = 0 V	—	—	1	mA
V _{GS} (th)	Gate-source threshold voltage	I _D = 1 mA, V _{DS} = 10 V	2	3	4	V
r _{DS} (ON)	Drain-source on-state resistance	I _D = 10 A, V _{GS} = 10 V	—	0.33	0.43	Ω
V _{DS} (ON)	Drain-source on-state voltage	I _D = 10 A, V _{GS} = 10 V	—	3.3	4.3	V
y _{fs}	Forward transfer admittance	I _D = 10 A, V _{DS} = 10 V	8.0	13	—	S
C _{iss}	Input capacitance	V _{DS} = 25 V, V _{GS} = 0 V, f = 1 MHz	—	2800	—	pF
C _{oss}	Output capacitance		—	350	—	pF
C _{rss}	Reverse transfer capacitance		—	50	—	pF
t _d (on)	Turn-on delay time	V _{DD} = 200 V, I _D = 10 A, V _{GS} = 10 V, R _{GEN} = R _{GS} = 50 Ω	—	50	—	ns
t _r	Rise time		—	85	—	ns
t _d (off)	Turn-off delay time		—	350	—	ns
t _f	Fall time		—	100	—	ns
V _{SD}	Source-drain voltage	I _S = 10 A, V _{GS} = 0 V	—	1.5	2.0	V
R _{th} (ch-c)	Thermal resistance	Channel to case	—	—	0.45	°C/W

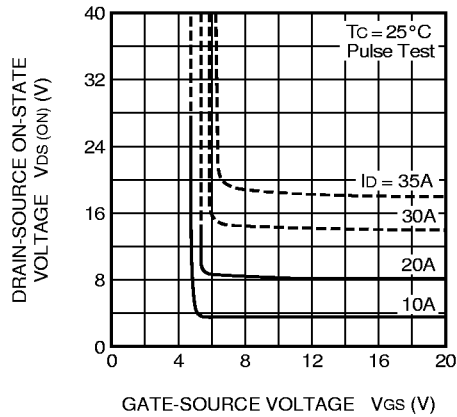
PERFORMANCE CURVES



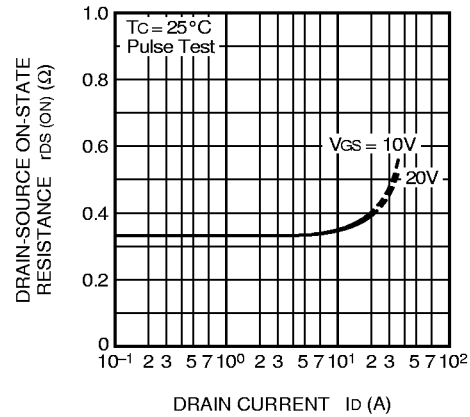
FS20SM-12

HIGH-SPEED SWITCHING USE

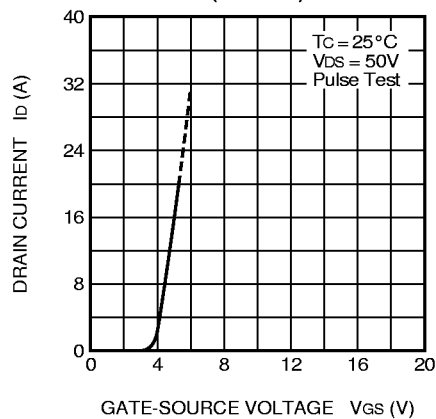
ON-STATE VOLTAGE VS.
GATE-SOURCE VOLTAGE
(TYPICAL)



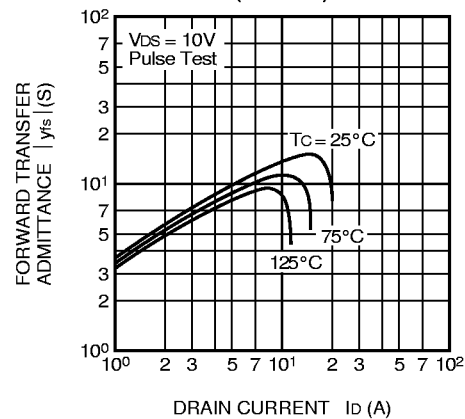
ON-STATE RESISTANCE VS.
DRAIN CURRENT
(TYPICAL)



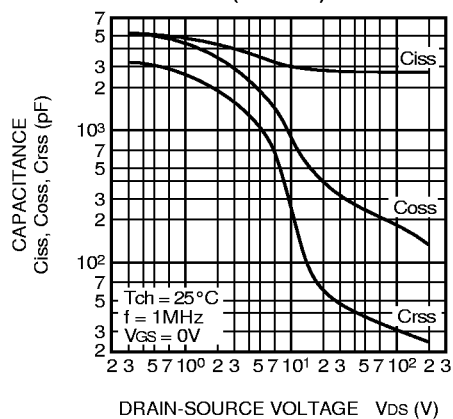
TRANSFER CHARACTERISTICS
(TYPICAL)



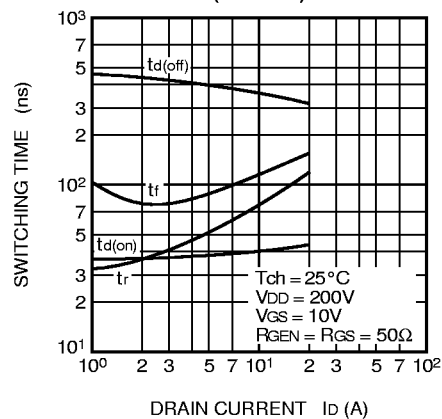
FORWARD TRANSFER ADMITTANCE
VS. DRAIN CURRENT
(TYPICAL)



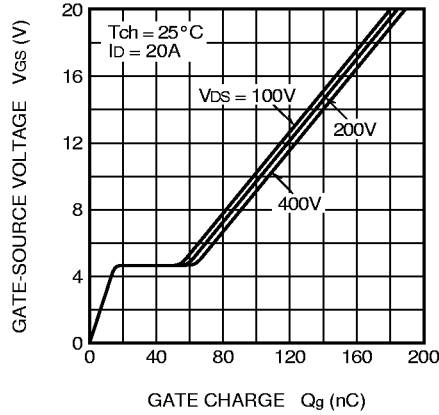
CAPACITANCE VS.
DRAIN-SOURCE VOLTAGE
(TYPICAL)



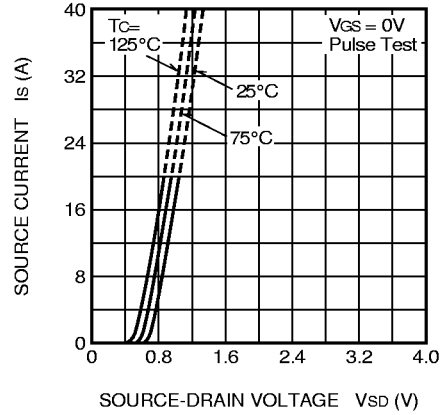
SWITCHING CHARACTERISTICS
(TYPICAL)



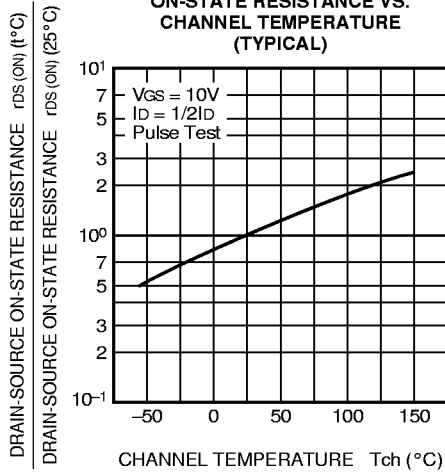
GATE-SOURCE VOLTAGE
VS. GATE CHARGE
(TYPICAL)



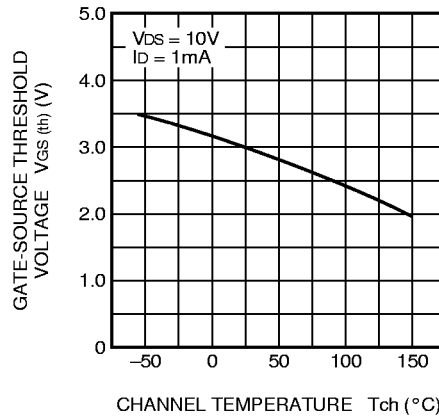
SOURCE-DRAIN DIODE
FORWARD CHARACTERISTICS
(TYPICAL)



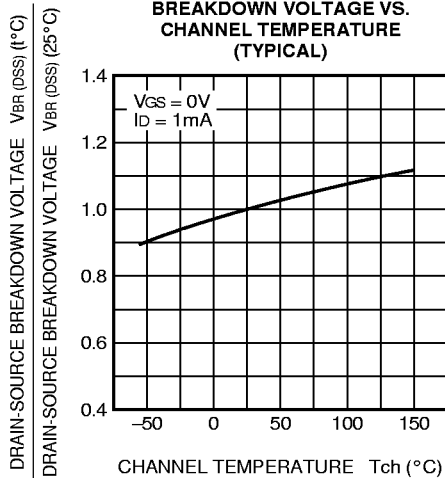
ON-STATE RESISTANCE VS.
CHANNEL TEMPERATURE
(TYPICAL)



THRESHOLD VOLTAGE VS.
CHANNEL TEMPERATURE
(TYPICAL)



BREAKDOWN VOLTAGE VS.
CHANNEL TEMPERATURE
(TYPICAL)



TRANSIENT THERMAL IMPEDANCE
CHARACTERISTICS

