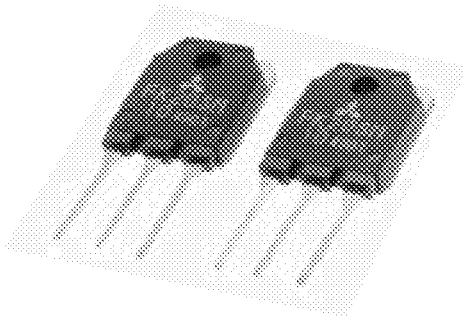


MITSUBISHI Nch POWER MOSFET

FK20SM-10

HIGH-SPEED SWITCHING USE

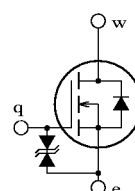
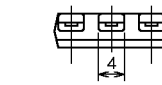
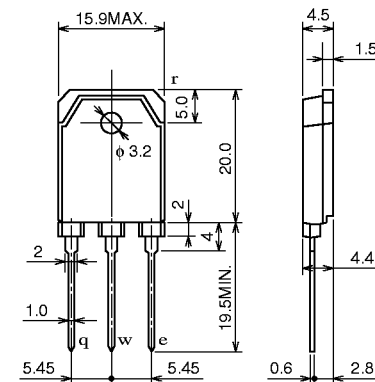
FK20SM-10



- ˘ V_{DS} 500V
- ˘ $r_{DS(ON)}$ (MAX) 0.36Ω
- ˘ I_D 20A
- ˘ Integrated Fast Recovery Diode (MAX.) 150ns

OUTLINE DRAWING

Dimensions in mm



- q GATE
- w DRAIN
- e SOURCE
- r DRAIN

TO-3P

APPLICATION

Servo motor drive, Robot, UPS, Inverter Fluorecent lamp, etc.

MAXIMUM RATINGS ($T_c = 25^\circ\text{C}$)

Symbol	Parameter	Conditions	Ratings	Unit
V_{DS}	Drain-source voltage	$V_{GS} = 0V$	500	V
V_{GS}	Gate-source voltage	$V_{DS} = 0V$	± 30	V
I_D	Drain current		20	A
I_{DM}	Drain current (Pulsed)		60	A
I_S	Source current		20	A
I_{SM}	Source current (Pulsed)		60	A
P_D	Maximum power dissipation		275	W
T_{ch}	Channel temperature		$-55 \sim +150$	$^\circ\text{C}$
T_{stg}	Storage temperature		$-55 \sim +150$	$^\circ\text{C}$
—	Weight	Typical value	4.8	g

Feb.1999

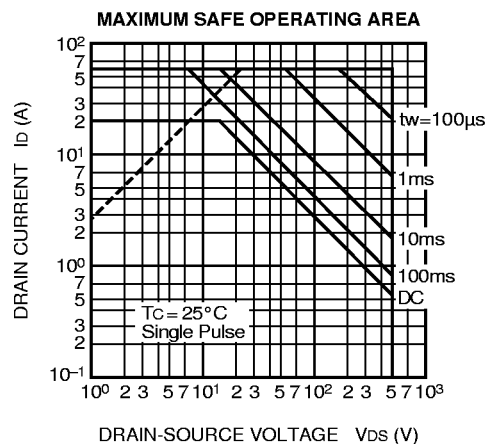
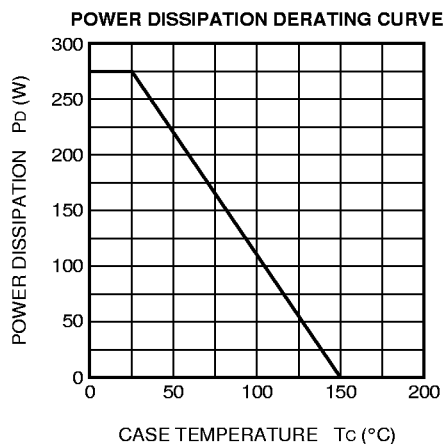
FK20SM-10

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 = 1mA, V _{GS} = 0V	500	—	—	V
V _{(BR) GSS}	Gate-source breakdown voltage	I _G = ±100μA, V _{DS} = 0V	±30	—	—	V
I _{GSS}	Gate-source leakage current	V _{GS} = ±25V, V _{DS} = 0V	—	—	±10	μA
I _{DSS}	Drain-source leakage current	V _{DS} = 500V, V _{GS} = 0V	—	—	1	mA
V _{GS(th)}	Gate-source threshold voltage	I _D = 1mA, V _{DS} = 10V	2	3	4	V
r _{DS(ON)}	Drain-source on-state resistance	I _D = 10A, V _{GS} = 10V	—	0.28	0.36	Ω
V _{DS(ON)}	Drain-source on-state voltage	I _D = 10A, V _{GS} = 10V	—	2.80	3.60	V
y _{fs}	Forward transfer admittance	I _D = 10A, V _{DS} = 10V	7.0	10.0	—	S
C _{iss}	Input capacitance	V _{DS} = 25V, V _{GS} = 0V, f = 1MHz	—	2800	—	pF
C _{oss}	Output capacitance		—	350	—	pF
C _{rss}	Reverse transfer capacitance		—	55	—	pF
t _{d(on)}	Turn-on delay time	V _{DD} = 200V, I _D = 10A, V _{GS} = 10V, R _{GEN} = R _{GS} = 50Ω	—	60	—	ns
t _r	Rise time		—	80	—	ns
t _{d(off)}	Turn-off delay time		—	270	—	ns
t _f	Fall time		—	80	—	ns
V _{SD}	Source-drain voltage	I _S = 10A, V _{GS} = 0V	—	1.5	2.0	V
R _{th(ch-c)}	Thermal resistance	Channel to case	—	—	0.45	°C/W
t _{rr}	Reverse recovery time	I _S = 20A, di _s /dt = -100A/μs	—	—	150	ns

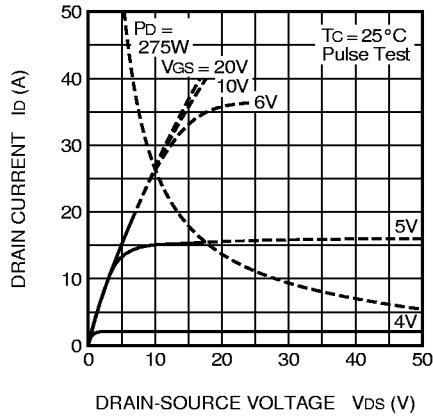
PERFORMANCE CURVES



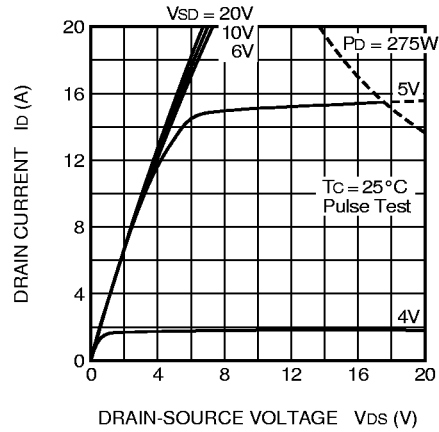
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HIGH-SPEED SWITCHING USE

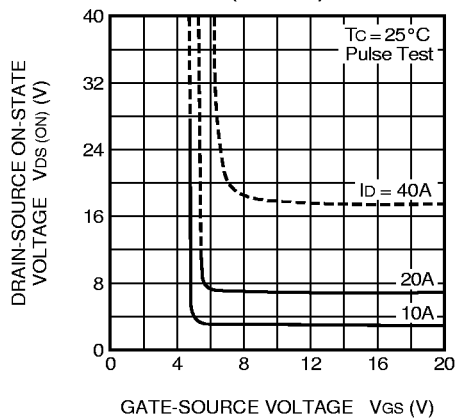
OUTPUT CHARACTERISTICS
(TYPICAL)



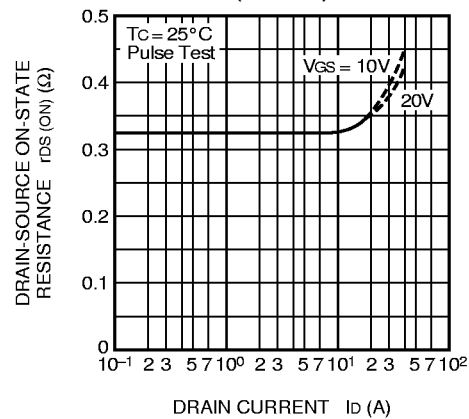
OUTPUT CHARACTERISTICS
(TYPICAL)



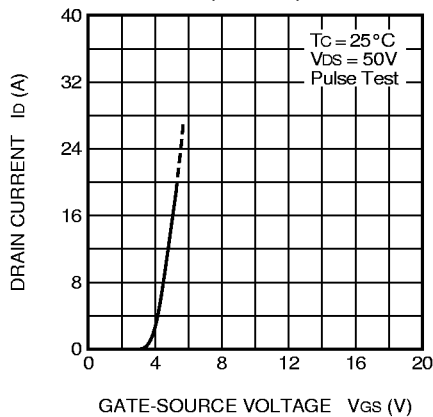
ON-STATE VOLTAGE VS.
GATE-SOURCE VOLTAGE
(TYPICAL)



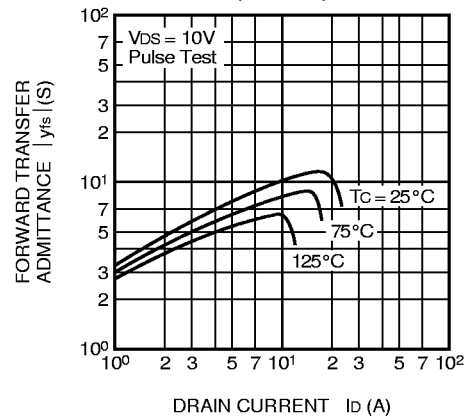
ON-STATE RESISTANCE VS.
DRAIN CURRENT
(TYPICAL)

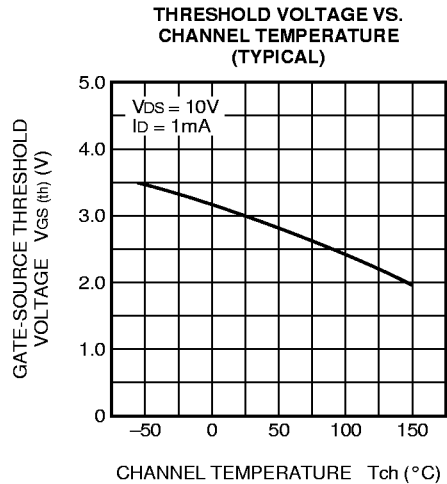
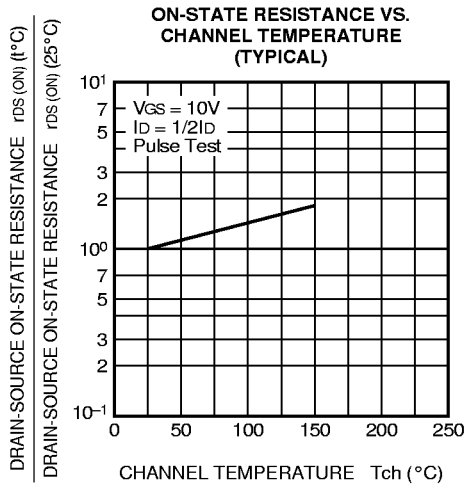
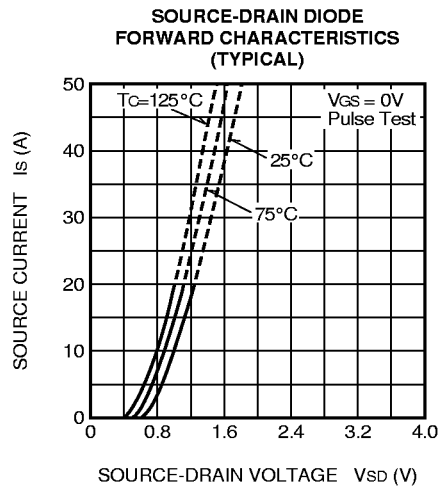
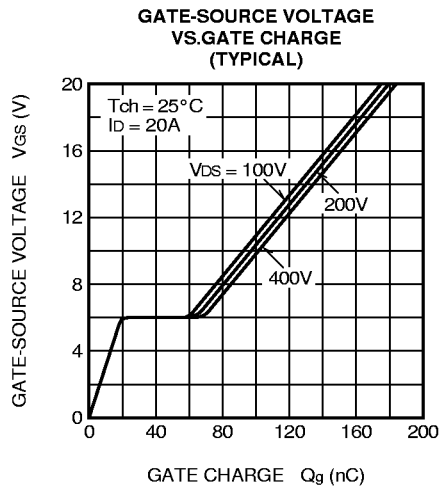
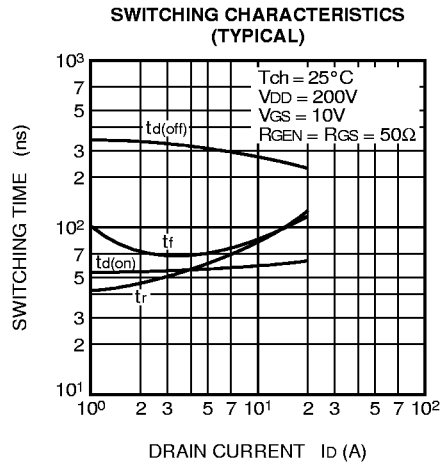
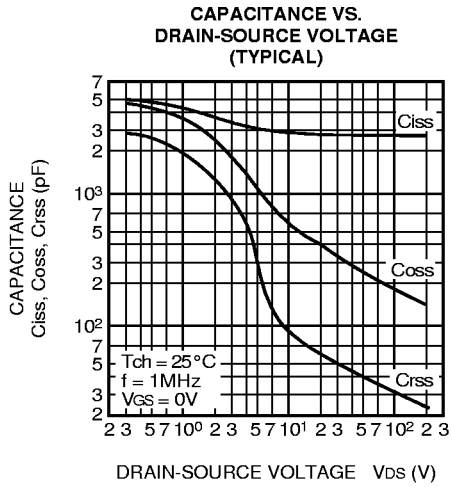


TRANSFER CHARACTERISTICS
(TYPICAL)



FORWARD TRANSFER ADMITTANCE
VS. DRAIN CURRENT
(TYPICAL)





FK20SM-10

HIGH-SPEED SWITCHING USE

DRAIN-SOURCE BREAKDOWN VOLTAGE $V_{(BR)DSS}$ (°C)
DRAIN-SOURCE BREAKDOWN VOLTAGE $V_{(BR)DSS}$ (25°C)

