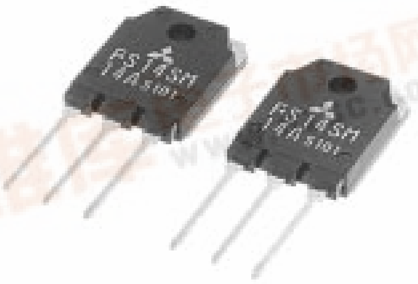
MITSUBISHI Nch POWER MOSFET

FS14SM-14A

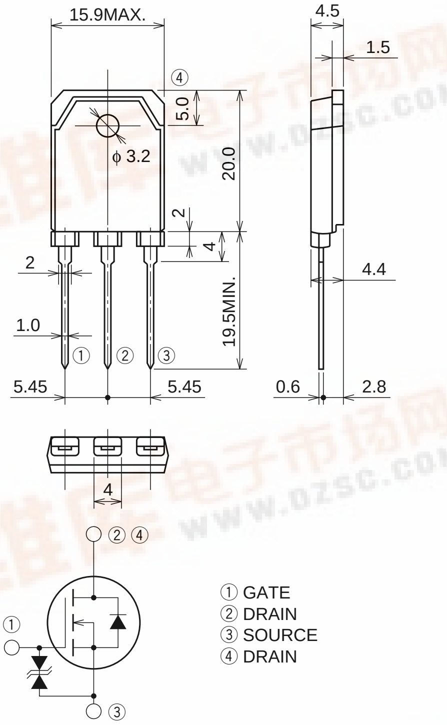
HIGH-SPEED SWITCHING USE

FS14SM-14A



- V_{DSS} 700V
- r_{DS} (ON) (MAX) 0.78Ω
- I_D 14A

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	700	V
V_{GSS}	Gate-source voltage	V_{DS} = 0V	±30	V
I_D	Drain current		14	A
I_{DM}	Drain current (Pulsed)		42	A
P_D	Maximum power dissipation		200	W
T_{ch}	Channel temperature		–55 ~ +150	°C
T_{stg}	Storage temperature		–55 ~ +150	°C
—	Weight	Typical value	4.8	g

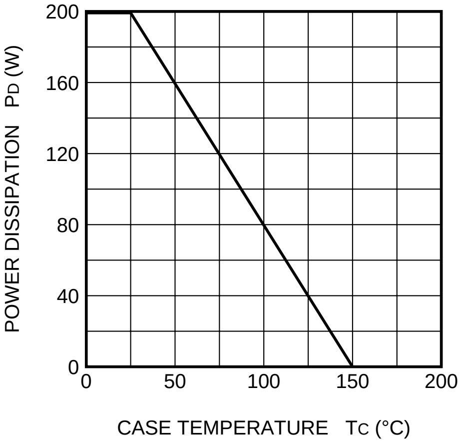
Feb.1999

ELECTRICAL CHARACTERISTICS (Tch = 25°C)

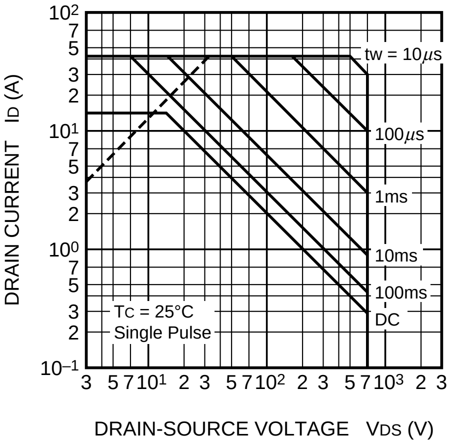
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
$V_{(BR)DSS}$	Drain-source breakdown voltage	I_D = 1mA, V_{GS} = 0V	700	—	—	V
$V_{(BR)GSS}$	Gate-source breakdown voltage	I_{GS} = ±100µA, V_{DS} = 0V	±30	—	—	V
I_{GSS}	Gate-source leakage current	V_{GS} = ±25V, V_{DS} = 0V	—	—	±10	µA
I_{DSS}	Drain-source leakage current	V_{DS} = 700V, 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 = 7A, V_{GS} = 10V	—	0.60	0.78	Ω
$V_{DS(ON)}$	Drain-source on-state voltage	I_D = 7A, V_{GS} = 10V	—	4.20	5.46	V
$\lvert y_{fs} \rvert$	Forward transfer admittance	I_D = 7A, V_{DS} = 10V	7.5	12.0	—	S
C_{iss}	Input capacitance	V_{DS} = 25V, V_{GS} = 0V, f = 1MHz	—	2250	—	pF
C_{oss}	Output capacitance		—	265	—	pF
C_{rss}	Reverse transfer capacitance		—	50	—	pF
$t_{d(on)}$	Turn-on delay time	V_{DD} = 200V, I_D = 7A, V_{GS} = 10V, R_{GEN} = R_{GS} = 50Ω	—	38	—	ns
t_r	Rise time		—	55	—	ns
$t_{d(off)}$	Turn-off delay time		—	270	—	ns
t_f	Fall time		—	85	—	ns
V_{SD}	Source-drain voltage	I_S = 7A, V_{GS} = 0V	—	1.0	1.5	V
$R_{th(ch-c)}$	Thermal resistance	Channel to case	—	—	0.625	°C/W

PERFORMANCE CURVES

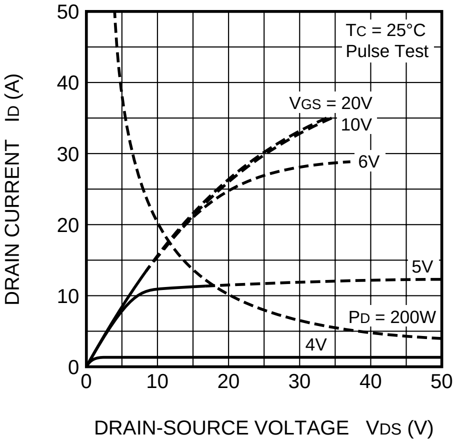
POWER DISSIPATION DERATING CURVE



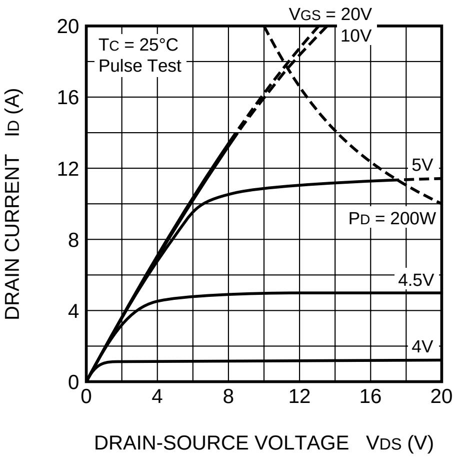
MAXIMUM SAFE OPERATING AREA

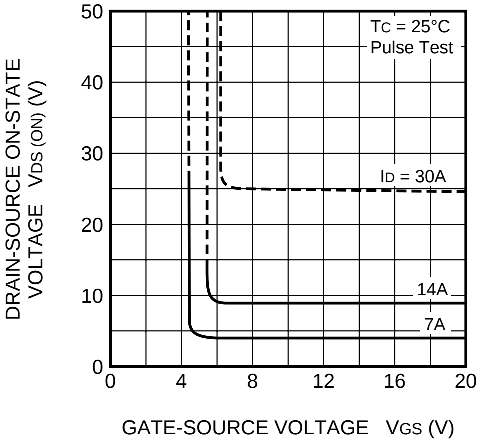


OUTPUT CHARACTERISTICS (TYPICAL)

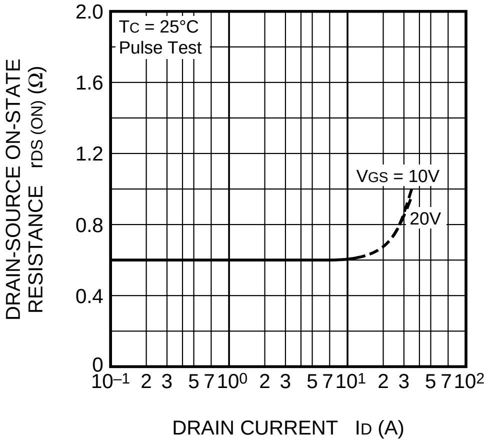


OUTPUT CHARACTERISTICS (TYPICAL)

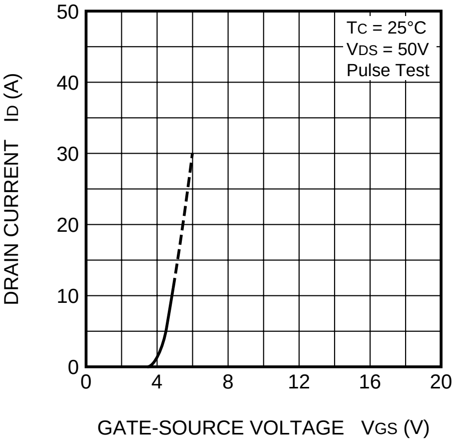




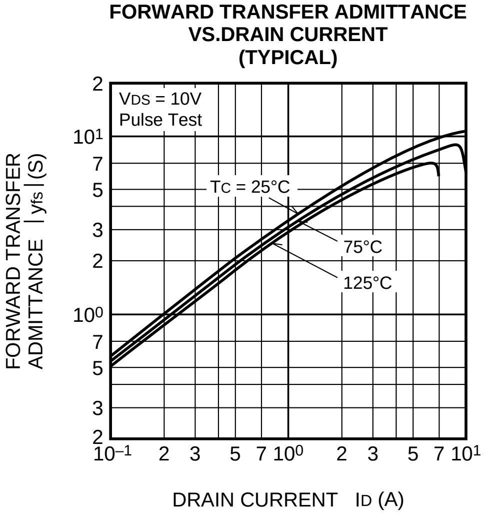
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



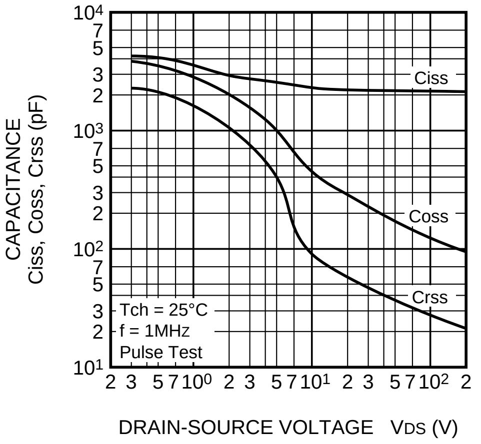
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



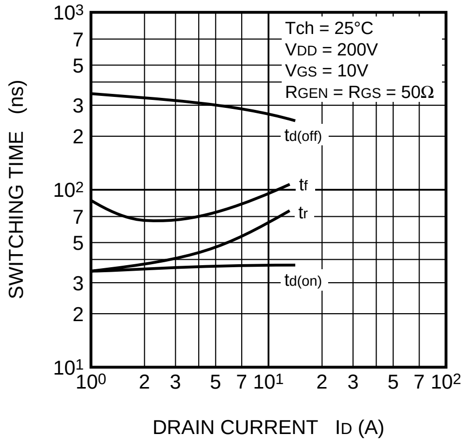
TRANSFER CHARACTERISTICS (TYPICAL)



FORWARD TRANSFER ADMITTANCE VS.DRAIN CURRENT (TYPICAL)

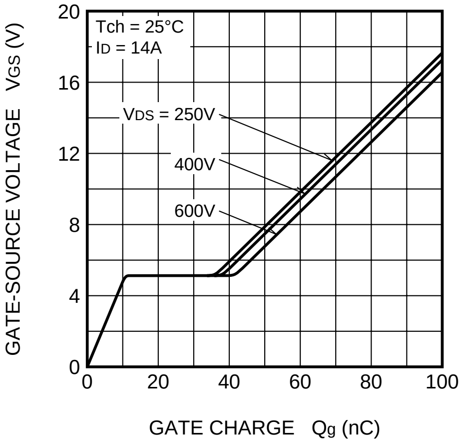


CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)

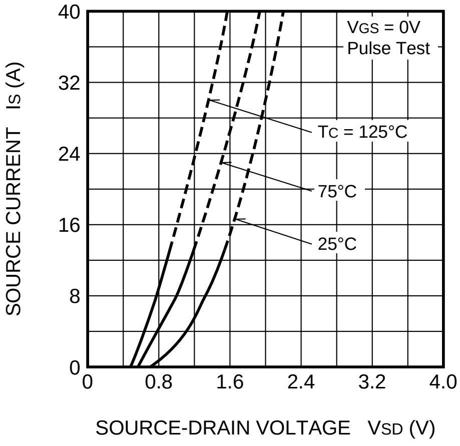


SWITCHING CHARACTERISTICS (TYPICAL)

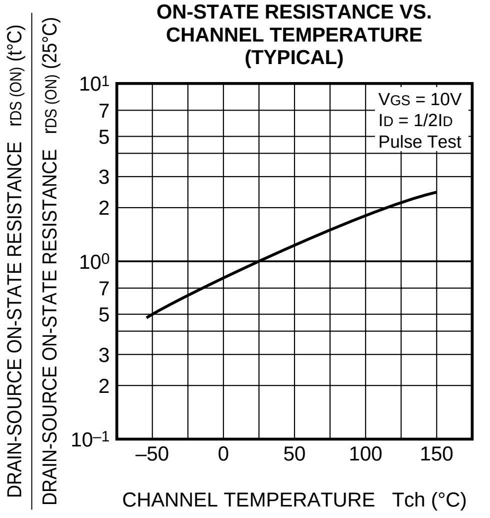
GATE-SOURCE VOLTAGE VS.GATE CHARGE (TYPICAL)



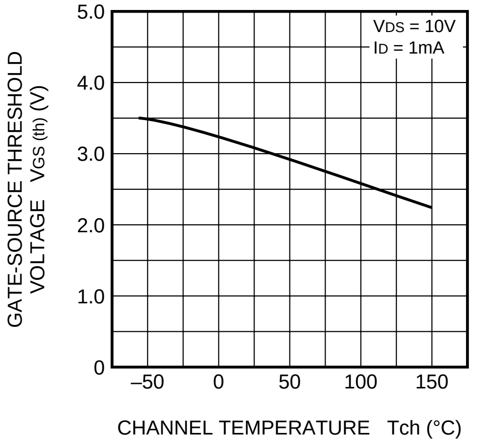
SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)



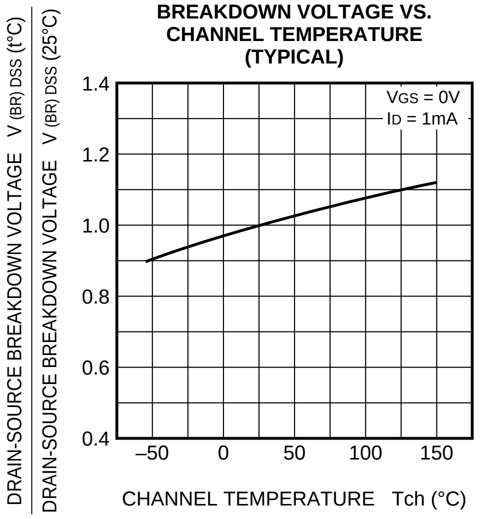
ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)



THRESHOLD VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



BREAKDOWN VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS