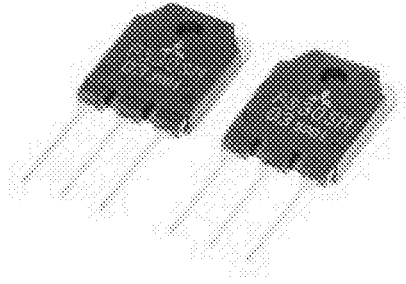


FS30SM-03

HIGH-SPEED SWITCHING USE

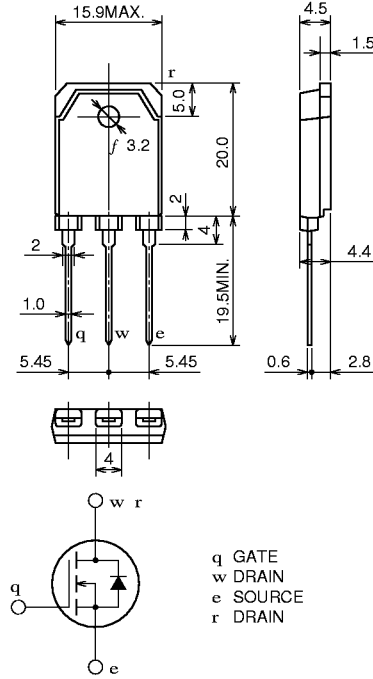
FS30SM-03



- ˆ 10V DRIVE
- ˆ V_{DS} 30V
- ˆ $r_{DS(ON)}$ (MAX) 46m Ω
- ˆ I_D 30A
- ˆ Integrated Fast Recovery Diode (TYP.) 45ns

OUTLINE DRAWING

Dimensions in mm



TO-3P

APPLICATION

Motor control, Lamp control, Solenoid control
DC-DC converter, etc.

MAXIMUM RATINGS (T_c = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
V_{DS}	Drain-source voltage	$V_{GS} = 0V$	30	V
V_{GSS}	Gate-source voltage	$V_{DS} = 0V$	± 20	V
I_D	Drain current		30	A
I_{DM}	Drain current (Pulsed)		120	A
I_{DA}	Avalanche drain current (Pulsed)	$L = 30\mu H$	30	A
I_S	Source current		30	A
I_{SM}	Source current (Pulsed)		120	A
P_D	Maximum power dissipation		30	W
T_{ch}	Channel temperature		-55 ~ +150	°C
T_{stg}	Storage temperature		-55 ~ +150	°C
—	Weight	Typical value	4.8	g

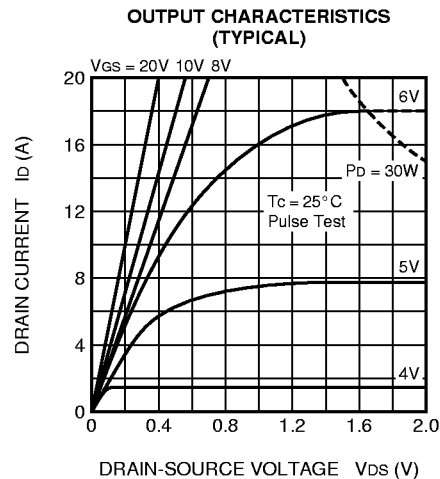
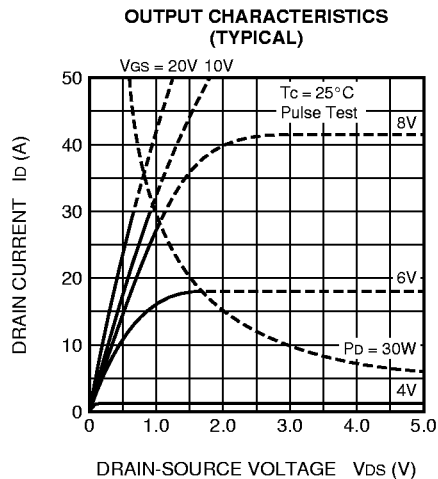
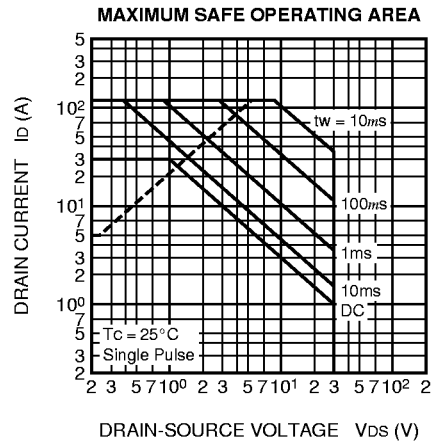
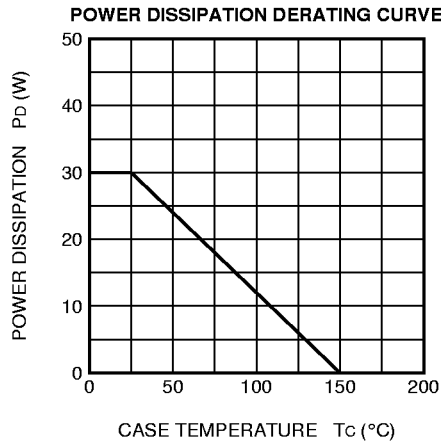
FS30SM-03

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	30	—	—	V
I _{GSS}	Gate-source leakage current	V _{GS} = ±20V, V _{DS} = 0V	—	—	±0.1	μA
I _{DSS}	Drain-source leakage current	V _{DS} = 30V, V _{GS} = 0V	—	—	0.1	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 = 15A, V _{GS} = 10V	—	36	46	mΩ
V _{DS} (ON)	Drain-source on-state voltage	I _D = 15A, V _{GS} = 10V	—	0.54	0.69	V
y _{fs}	Forward transfer admittance	I _D = 15A, V _{DS} = 5V	—	11	—	S
C _{iss}	Input capacitance	V _{DS} = 10V, V _{GS} = 0V, f = 1MHz	—	600	—	pF
C _{oss}	Output capacitance		—	250	—	pF
C _{rss}	Reverse transfer capacitance		—	110	—	pF
t _d (on)	Turn-on delay time	V _{DD} = 15V, I _D = 15A, V _{GS} = 10V, R _{GEN} = R _{GS} = 50Ω	—	18	—	ns
t _r	Rise time		—	65	—	ns
t _d (off)	Turn-off delay time		—	30	—	ns
t _f	Fall time		—	25	—	ns
V _{SD}	Source-drain voltage	I _S = 15A, V _{GS} = 0V	—	1.0	1.5	V
R _{th} (ch-c)	Thermal resistance	Channel to case	—	—	4.17	°C/W
t _{rr}	Reverse recovery time	I _S = 15A, di/dt = -50A/μs	—	45	—	ns

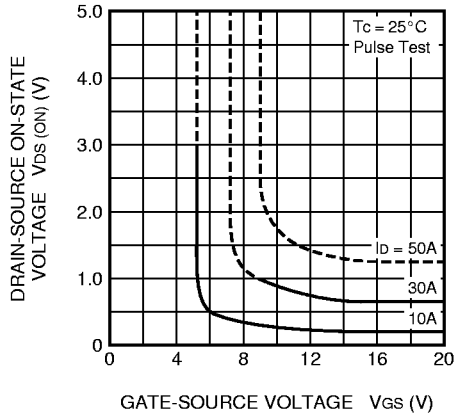
PERFORMANCE CURVES



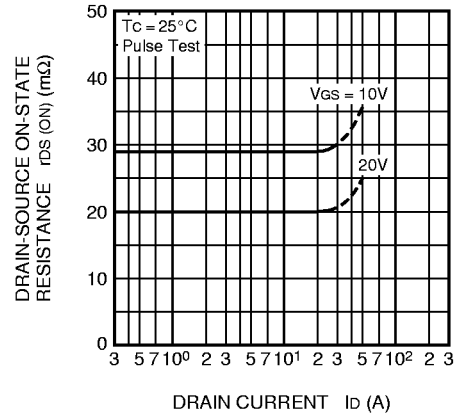
FS30SM-03

HIGH-SPEED SWITCHING USE

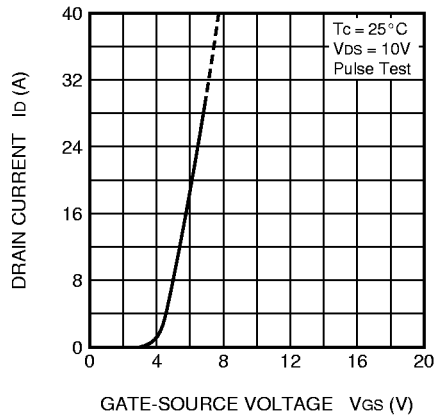
ON-STATE VOLTAGE VS.
GATE-SOURCE VOLTAGE
(TYPICAL)



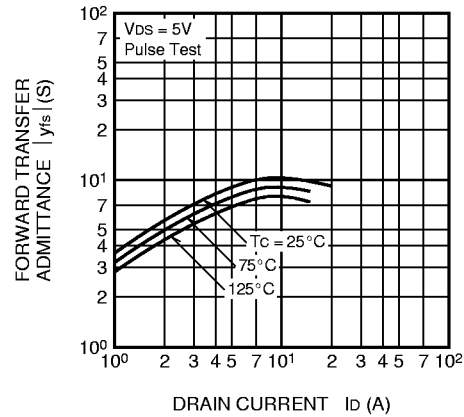
ON-STATE RESISTANCE VS.
DRAIN CURRENT
(TYPICAL)



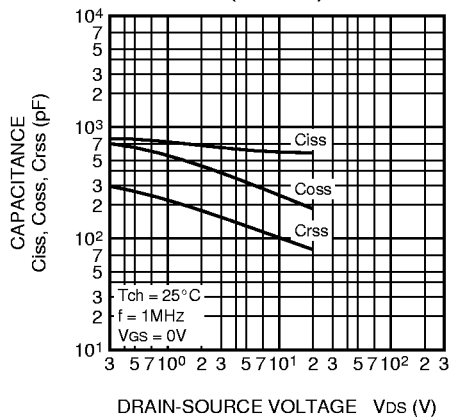
TRANSFER CHARACTERISTICS
(TYPICAL)



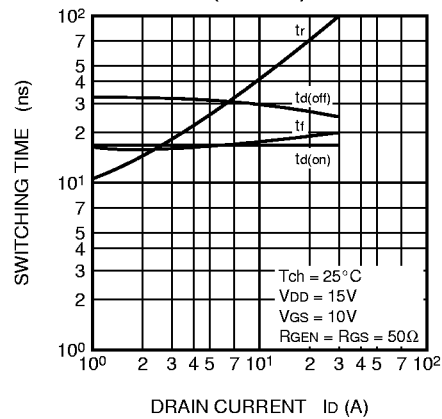
FORWARD TRANSFER ADMITTANCE
VS. DRAIN CURRENT
(TYPICAL)



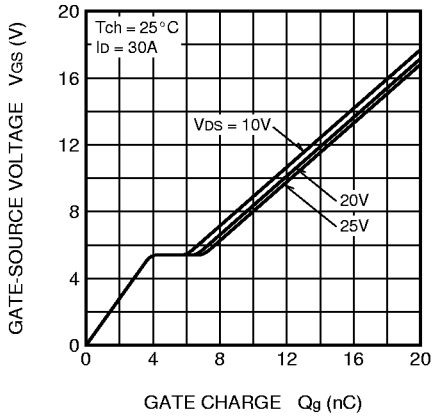
CAPACITANCE VS.
DRAIN-SOURCE VOLTAGE
(TYPICAL)



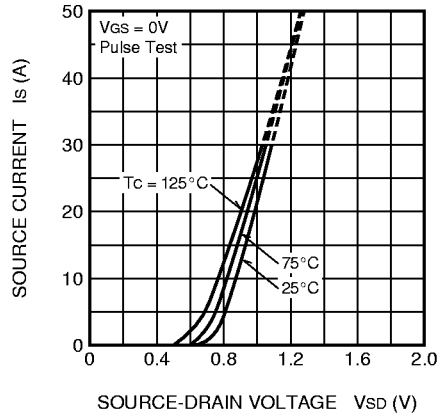
SWITCHING CHARACTERISTICS
(TYPICAL)



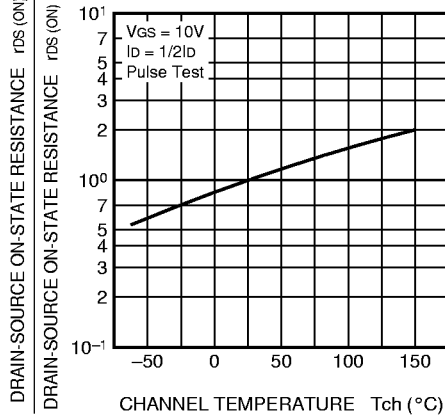
GATE-SOURCE VOLTAGE
VS. GATE CHARGE
(TYPICAL)



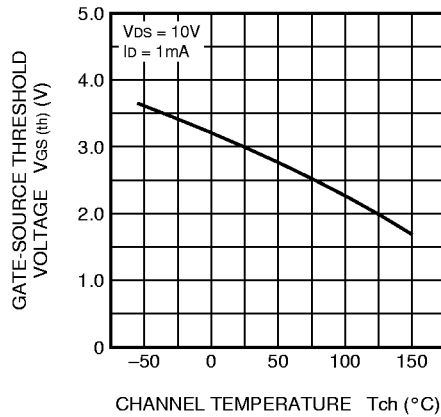
SOURCE-DRAIN DIODE
FORWARD CHARACTERISTICS
(TYPICAL)



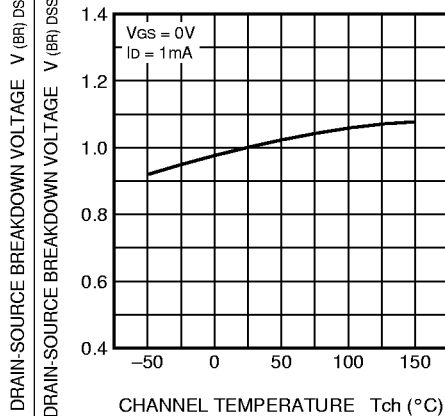
ON-STATE RESISTANCE VS.
CHANNEL TEMPERATURE
(TYPICAL)



THRESHOLD VOLTAGE VS.
CHANNEL TEMPERATURE
(TYPICAL)



BREAKDOWN VOLTAGE VS.
CHANNEL TEMPERATURE
(TYPICAL)



TRANSIENT THERMAL IMPEDANCE
CHARACTERISTICS

