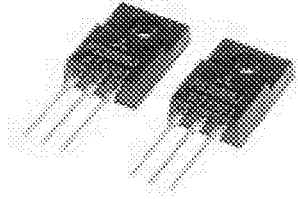


FS30KMJ-03

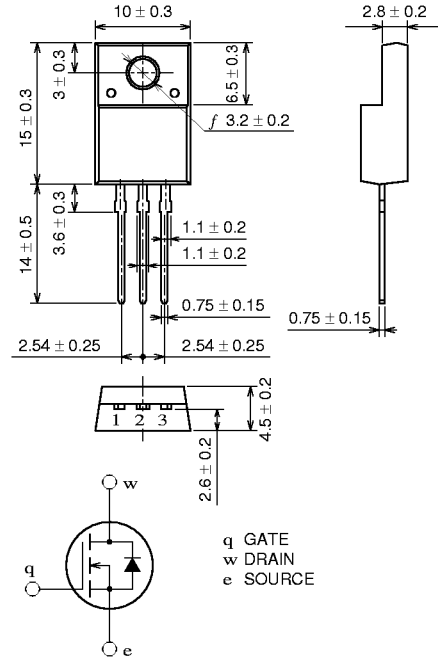
HIGH-SPEED SWITCHING USE

FS30KMJ-03

- ˆ 4V DRIVE
- ˆ V_{DS} 30V
- ˆ $r_{DS(ON)}$ (MAX) $38m\Omega$
- ˆ I_D 30A
- ˆ Integrated Fast Recovery Diode (TYP.) 45ns
- ˆ V_{iso} 2000V

OUTLINE DRAWING

Dimensions in mm

**TO-220FN****APPLICATION**

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

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

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		20	W
T_{ch}	Channel temperature		$-55 \sim +150$	$^\circ\text{C}$
T_{stg}	Storage temperature		$-55 \sim +150$	$^\circ\text{C}$
V_{iso}	Isolation voltage	AC for 1minute, Terminal to case	2000	V
—	Weight	Typical value	2.0	g

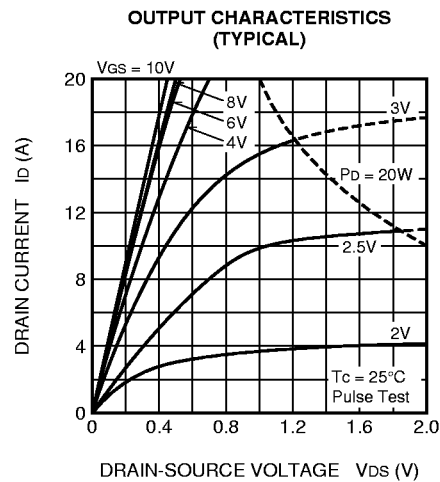
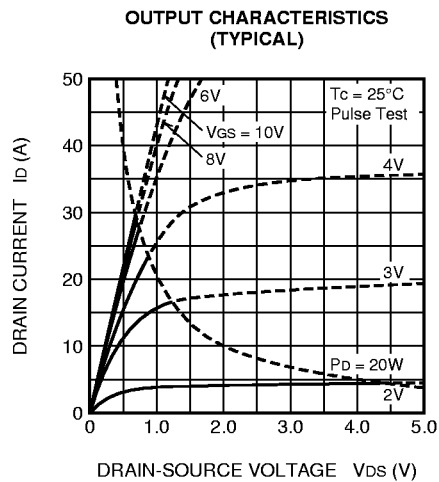
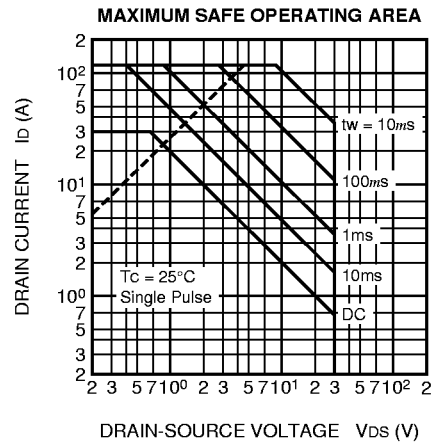
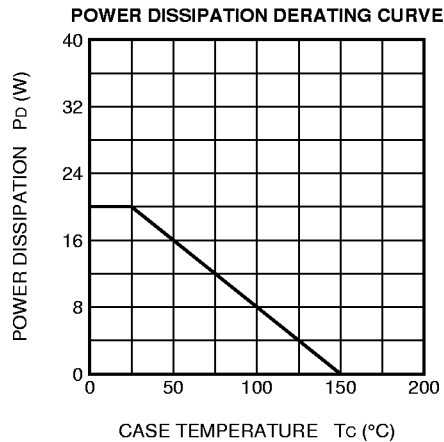
FS30KMJ-03

HIGH-SPEED SWITCHING USE

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

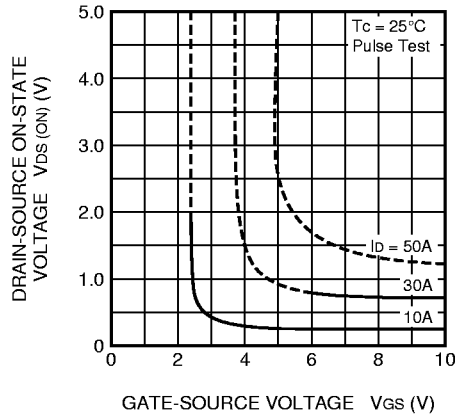
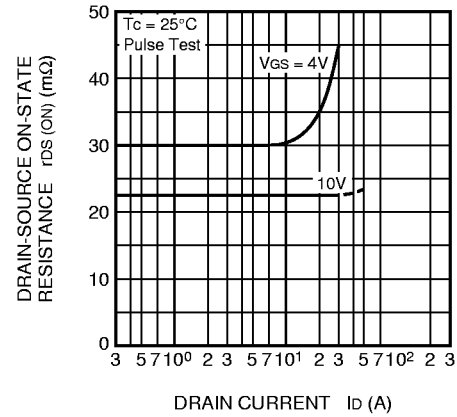
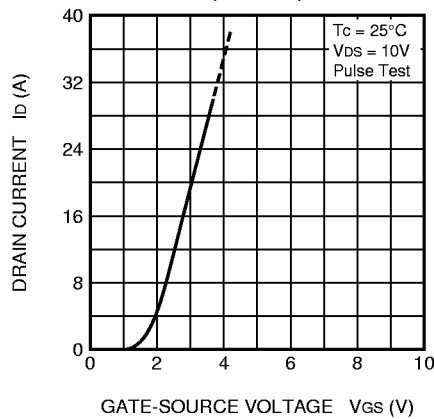
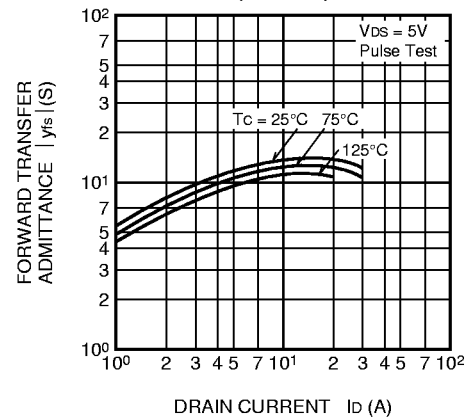
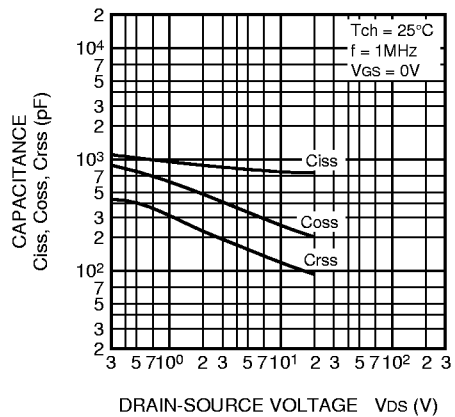
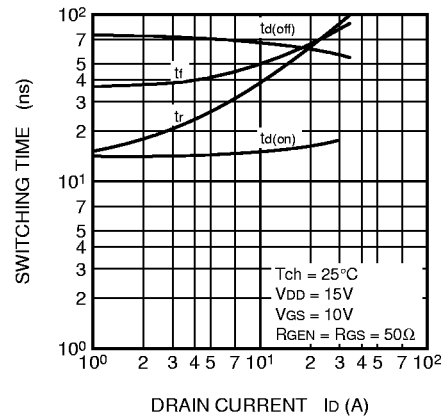
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V _{(BR)DSS}	Drain-source breakdown voltage	I _D = 1mA, V _{GS} = 0V	30	—	—	V
I _{GSS}	Gate-source leakage current	V _{GS} = ±20V, V _{DS} = 0V	—	—	±0.1	μA
I _{DSS}	Drain-source leakage current	V _{DS} = 30V, V _{GS} = 0V	—	—	0.1	mA
V _{GS(th)}	Gate-source threshold voltage	I _D = 1mA, V _{DS} = 10V	1.0	1.5	2.0	V
r _{DS(ON)}	Drain-source on-state resistance	I _D = 15A, V _{GS} = 10V	—	29	38	mΩ
r _{DS(ON)}	Drain-source on-state resistance	I _D = 15A, V _{GS} = 4V	—	44	73	mΩ
V _{DS(ON)}	Drain-source on-state voltage	I _D = 15A, V _{GS} = 10V	—	0.435	0.57	V
y _{fs}	Forward transfer admittance	I _D = 15A, V _{DS} = 5V	—	15	—	S
C _{iss}	Input capacitance	V _{DS} = 10V, V _{GS} = 0V, f = 1MHz	—	800	—	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	—	14	—	ns
t _r	Rise time		—	55	—	ns
t _{d(off)}	Turn-off delay time		—	65	—	ns
t _f	Fall time		—	60	—	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	—	—	6.25	°C/W
t _{rr}	Reverse recovery time	I _S = 15A, di/dt = -50A/μs	—	45	—	ns

PERFORMANCE CURVES



FS30KMJ-03

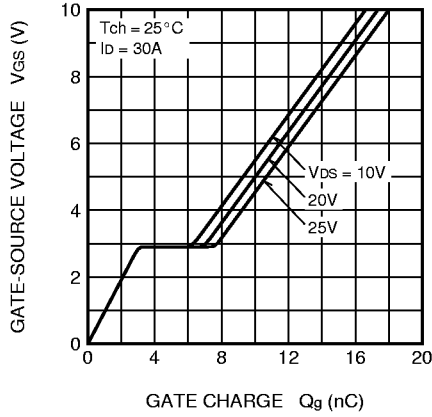
HIGH-SPEED SWITCHING USE

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)

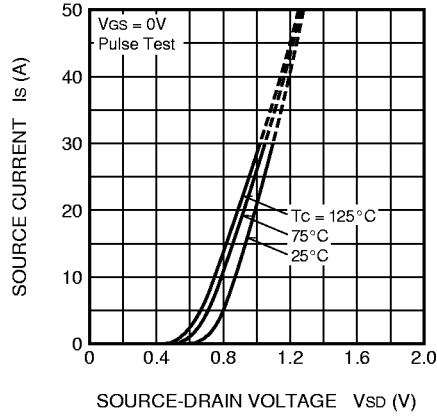
FS30KMJ-03

HIGH-SPEED SWITCHING USE

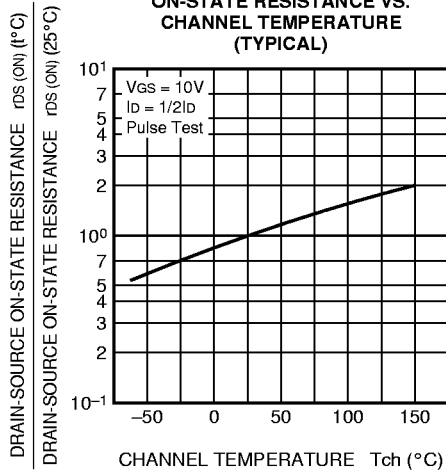
**GATE-SOURCE VOLTAGE
VS. GATE CHARGE
(TYPICAL)**



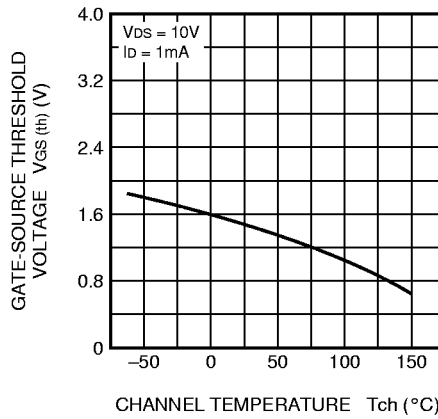
**SOURCE-DRAIN DIODE
FORWARD CHARACTERISTICS
(TYPICAL)**



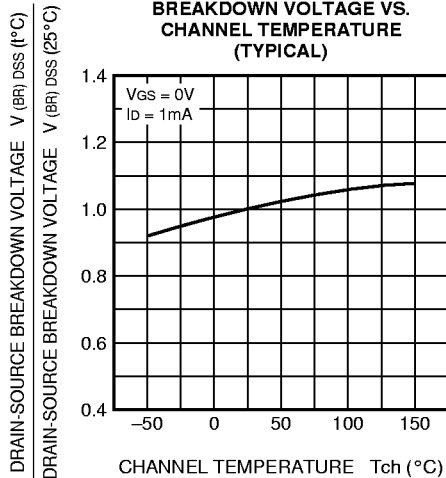
**ON-STATE RESISTANCE VS.
CHANNEL TEMPERATURE
(TYPICAL)**



**THRESHOLD VOLTAGE VS.
CHANNEL TEMPERATURE
(TYPICAL)**



**BREAKDOWN VOLTAGE VS.
CHANNEL TEMPERATURE
(TYPICAL)**



**TRANSIENT THERMAL IMPEDANCE
CHARACTERISTICS**

