

FS10VSJ-06

HIGH-SPEED SWITCHING USE

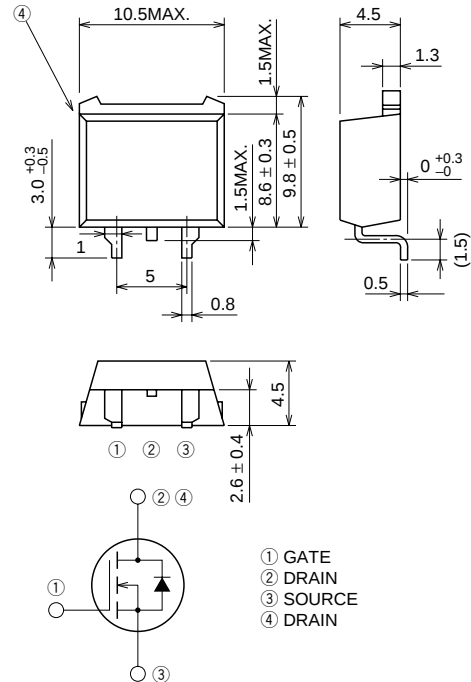
FS10VSJ-06



- 4V DRIVE
- V_{DS} 60V
- $r_{DS(ON)}$ (MAX) 70m Ω
- I_D 10A
- Integrated Fast Recovery Diode (TYP.) 55ns

OUTLINE DRAWING

Dimensions in mm



TO-220S

APPLICATION

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

MAXIMUM RATINGS (Tc = 25°C)

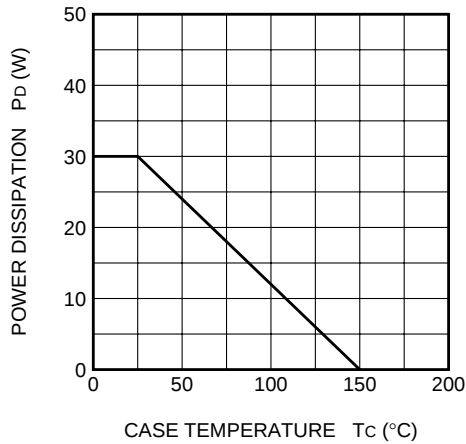
Symbol	Parameter	Conditions	Ratings	Unit
V_{DS}	Drain-source voltage	$V_{GS} = 0V$	60	V
V_{GS}	Gate-source voltage	$V_{DS} = 0V$	± 20	V
I_D	Drain current		10	A
I_{DM}	Drain current (Pulsed)		40	A
I_{DA}	Avalanche drain current (Pulsed)	$L = 100\mu H$	10	A
I_S	Source current		10	A
I_{SM}	Source current (Pulsed)		40	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	1.2	g

ELECTRICAL CHARACTERISTICS (Tch = 25°C)

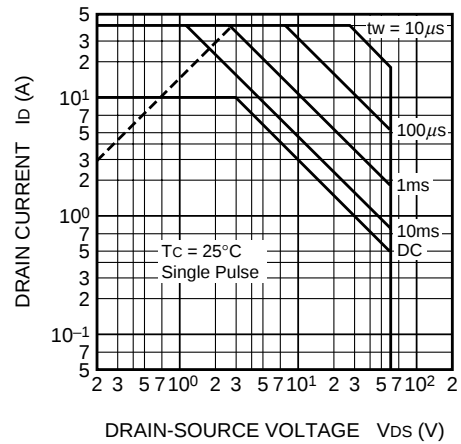
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V (BR) DSS	Drain-source breakdown voltage	Id = 1mA, Vgs = 0V	60	—	—	V
IGSS	Gate-source leakage current	Vgs = ±20V, Vds = 0V	—	—	±0.1	μA
IdSS	Drain-source leakage current	Vds = 60V, Vgs = 0V	—	—	0.1	mA
VGS (th)	Gate-source threshold voltage	Id = 1mA, Vds = 10V	1.0	1.5	2.0	V
rDS (ON)	Drain-source on-state resistance	Id = 5A, Vgs = 10V	—	53	70	mΩ
rDS (ON)	Drain-source on-state resistance	Id = 5A, Vgs = 4V	—	66	91	mΩ
VDS (ON)	Drain-source on-state voltage	Id = 5A, Vgs = 10V	—	0.265	0.35	V
yfs	Forward transfer admittance	Id = 5A, Vds = 5V	—	13	—	S
Ciss	Input capacitance	Vds = 10V, Vgs = 0V, f = 1MHz	—	800	—	pF
Coss	Output capacitance		—	190	—	pF
Crss	Reverse transfer capacitance		—	80	—	pF
td (on)	Turn-on delay time	VDD = 30V, Id = 5A, Vgs = 10V, RGEN = RGS = 50Ω	—	14	—	ns
tr	Rise time		—	17	—	ns
td (off)	Turn-off delay time		—	65	—	ns
tf	Fall time		—	40	—	ns
VSD	Source-drain voltage	Is = 5A, Vgs = 0V	—	1.0	1.5	V
Rth (ch-c)	Thermal resistance	Channel to case	—	—	4.17	°C/W
trr	Reverse recovery time	Is = 10A, dis/dt = -100A/μs	—	55	—	ns

PERFORMANCE CURVES

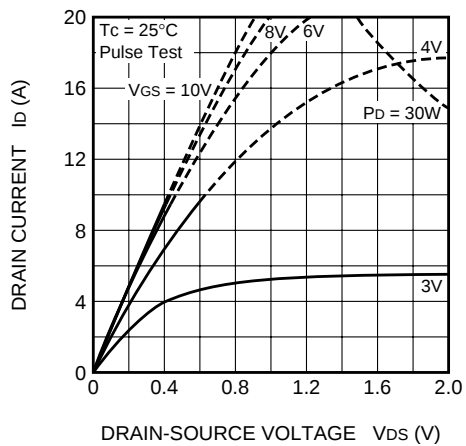
POWER DISSIPATION DERATING CURVE



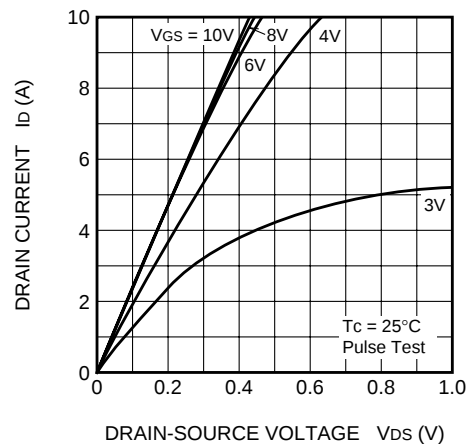
MAXIMUM SAFE OPERATING AREA



OUTPUT CHARACTERISTICS (TYPICAL)



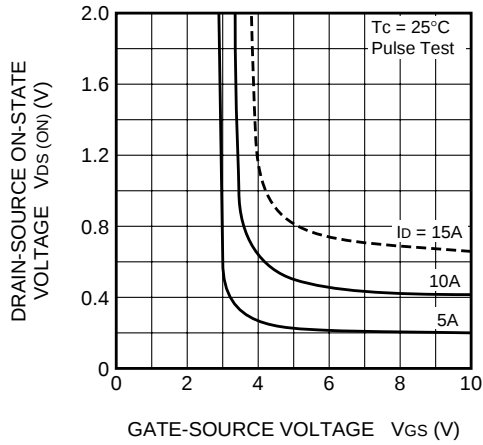
OUTPUT CHARACTERISTICS (TYPICAL)



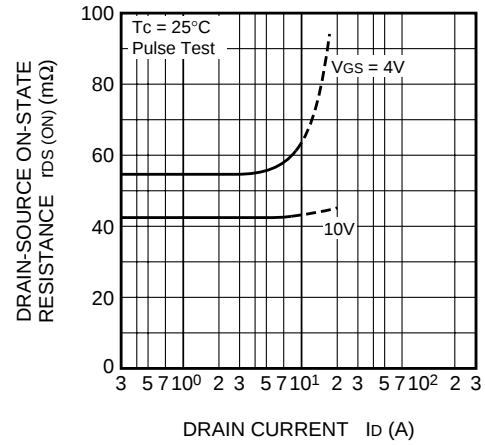
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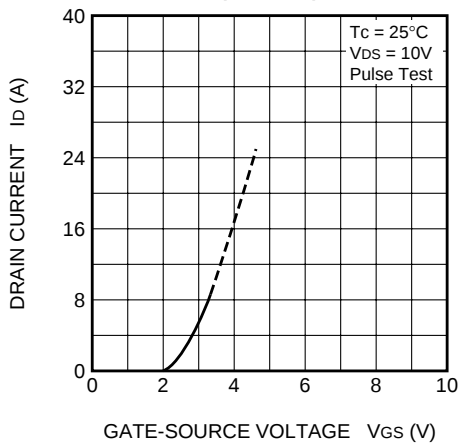
ON-STATE VOLTAGE VS.
GATE-SOURCE VOLTAGE
(TYPICAL)



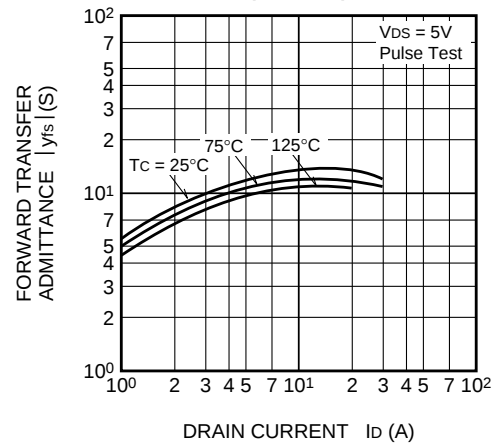
ON-STATE RESISTANCE VS.
DRAIN CURRENT
(TYPICAL)



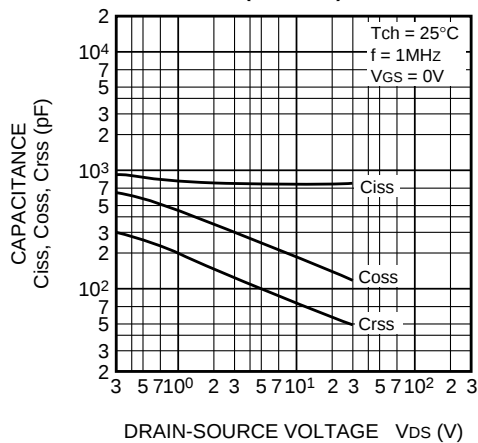
TRANSFER CHARACTERISTICS
(TYPICAL)



FORWARD TRANSFER ADMITTANCE
VS. DRAIN CURRENT
(TYPICAL)



CAPACITANCE VS.
DRAIN-SOURCE VOLTAGE
(TYPICAL)



SWITCHING CHARACTERISTICS
(TYPICAL)

