


FS3VS-10

HIGH-SPEED SWITCHING USE

FS3VS-10



- V_{DSS} 500V
- $r_{DS(ON)}$ (MAX) 4.4Ω
- I_D 3A

OUTLINE DRAWING Dimensions in mm



① GATE
② DRAIN
③ SOURCE
④ DRAIN

TO-220S

APPLICATION

SMPS, DC-DC Converter, battery charger, power supply of printer, copier, HDD, FDD, TV, VCR, personal computer etc.

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

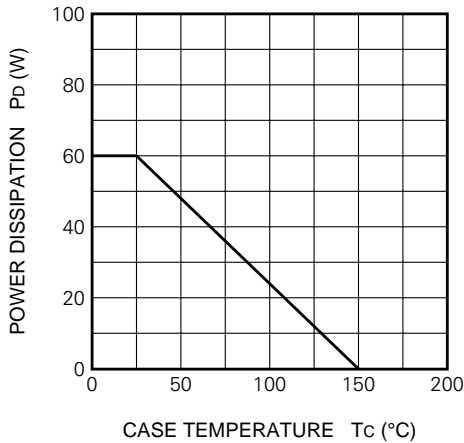
Symbol	Parameter	Conditions	Ratings	Unit
V_{DSS}	Drain-source voltage	$V_{GS} = 0V$	500	V
V_{GSS}	Gate-source voltage	$V_{DS} = 0V$	± 30	V
I_D	Drain current		3	A
I_{DM}	Drain current (Pulsed)		9	A
P_D	Maximum power dissipation		60	W
T_{ch}	Channel temperature		$-55 \sim +150$	$^\circ\text{C}$
T_{stg}	Storage temperature		$-55 \sim +150$	$^\circ\text{C}$
—	Weight	Typical value	1.2	g

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

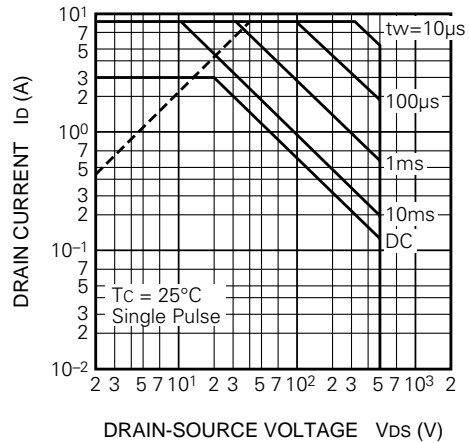
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V (BR) DSS	Drain-source breakdown voltage	I _D = 1mA, V _{GS} = 0V	500	—	—	V
V (BR) GSS	Gate-source breakdown voltage	I _G = ±100μA, V _{DS} = 0V	±30	—	—	V
I _{GSS}	Gate-source leakage current	V _{GS} = ±25V, V _{DS} = 0V	—	—	±10	μA
I _{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 = 1A, V _{GS} = 10V	—	3.4	4.4	Ω
V _{DS(ON)}	Drain-source on-state voltage	I _D = 1A, V _{GS} = 10V	—	3.4	4.4	V
y _{fs}	Forward transfer admittance	I _D = 1A, V _{DS} = 10V	1.0	1.5	—	S
C _{iss}	Input capacitance	V _{DS} = 25V, V _{GS} = 0V, f = 1MHz	—	300	—	pF
C _{oss}	Output capacitance		—	35	—	pF
C _{rss}	Reverse transfer capacitance		—	6	—	pF
t _{d(on)}	Turn-on delay time	V _{DD} = 200V, I _D = 1A, V _{GS} = 10V, R _{GEN} = R _{GS} = 50Ω	—	13	—	ns
t _r	Rise time		—	10	—	ns
t _{d(off)}	Turn-off delay time		—	30	—	ns
t _f	Fall time		—	30	—	ns
V _{SD}	Source-drain voltage	I _S = 1A, V _{GS} = 0V	—	1.5	2.0	V
R _{th(ch-c)}	Thermal resistance	Channel to case	—	—	2.08	°C/W

PERFORMANCE CURVES

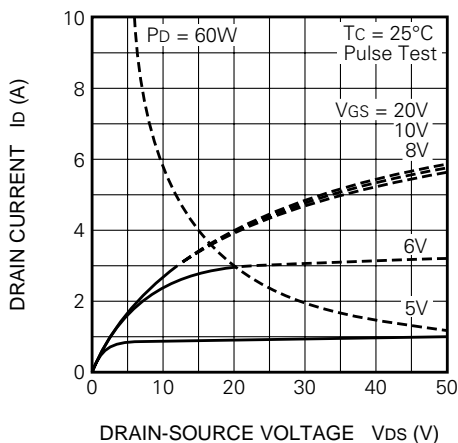
POWER DISSIPATION DERATING CURVE



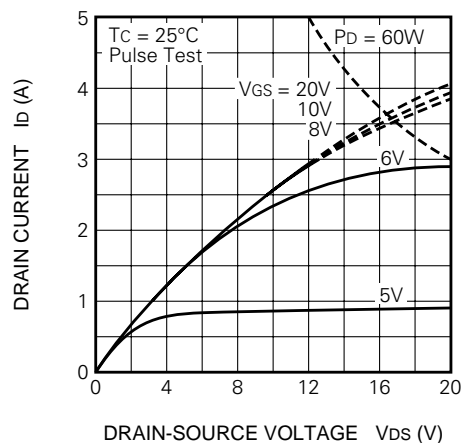
MAXIMUM SAFE OPERATING AREA



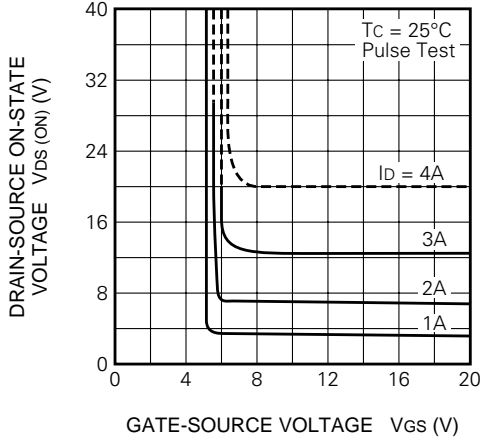
OUTPUT CHARACTERISTICS (TYPICAL)



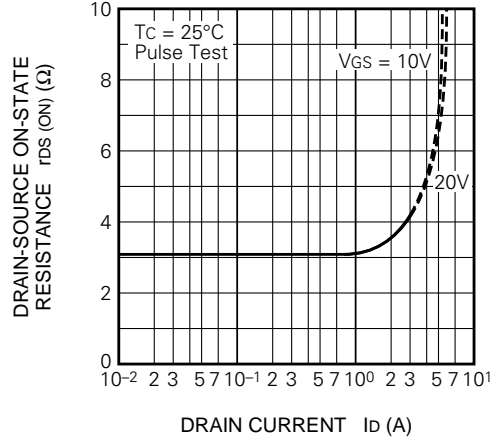
OUTPUT CHARACTERISTICS (TYPICAL)



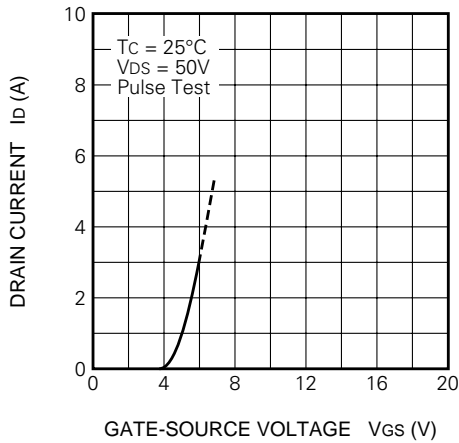
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



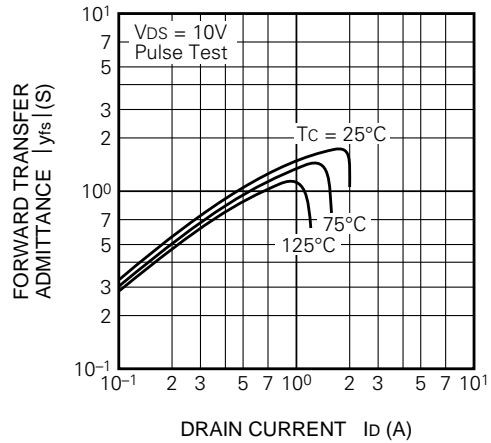
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



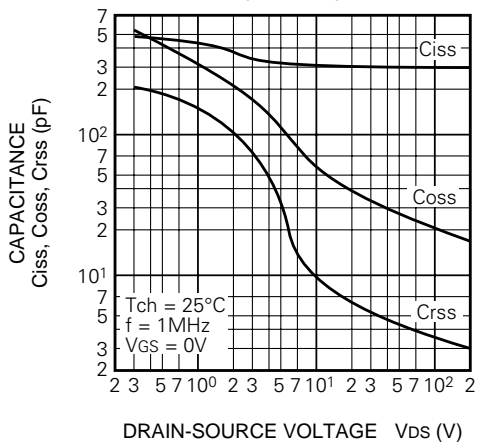
TRANSFER CHARACTERISTICS (TYPICAL)



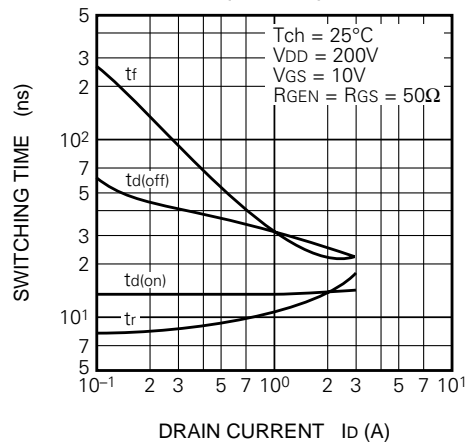
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



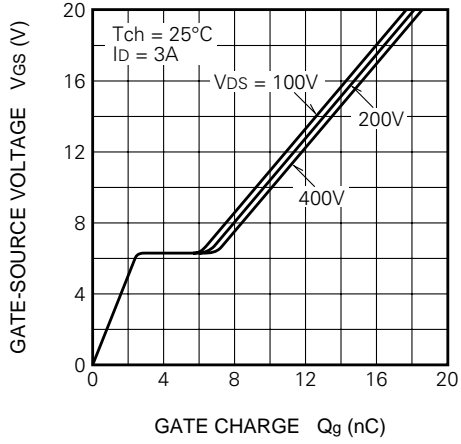
CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)



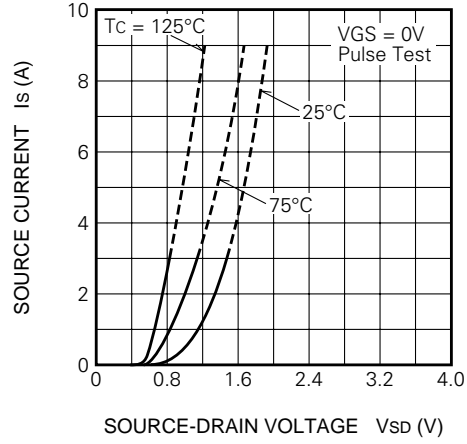
SWITCHING CHARACTERISTICS (TYPICAL)



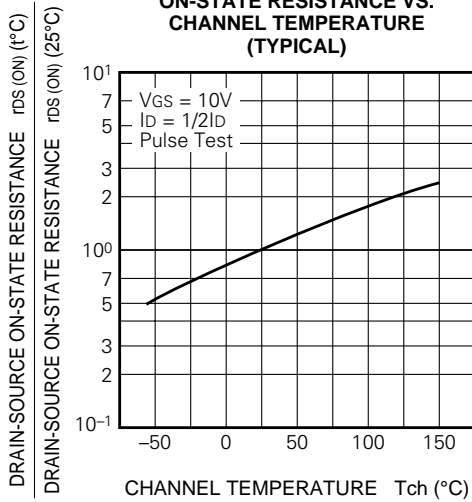
GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)



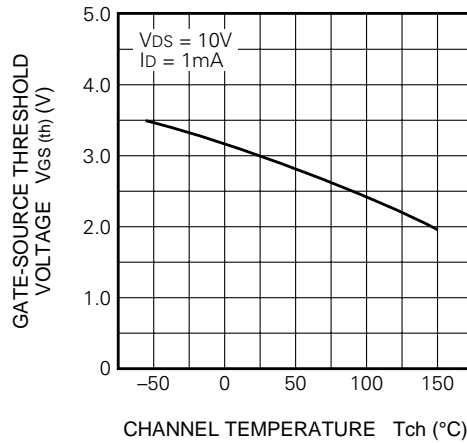
SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)



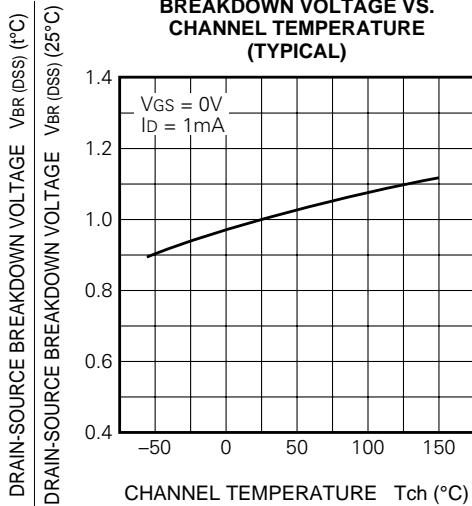
ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)



THRESHOLD VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



BREAKDOWN VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS

