

FS10VS-9

HIGH-SPEED SWITCHING USE

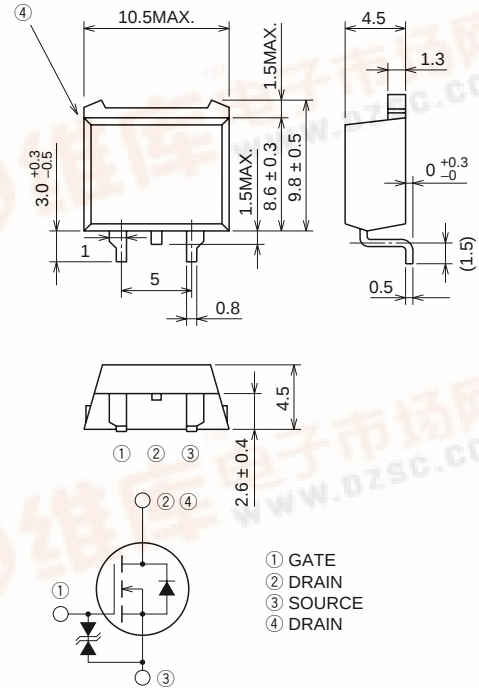
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- V_{DS} 450V
- $r_{DS(ON)}(MAX)$ 0.73Ω
- I_D 10A

OUTLINE DRAWING

Dimensions in mm



TO-220S

APPLICATION

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

MAXIMUM RATINGS (Tc = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
V_{DS}	Drain-source voltage	$V_{GS} = 0V$	450	V
V_{GS}	Gate-source voltage	$V_{DS} = 0V$	± 30	V
I_D	Drain current		10	A
I_{DM}	Drain current (Pulsed)		30	A
P_D	Maximum power dissipation		125	W
T_{ch}	Channel temperature		$-55 \sim +150$	°C
T_{stg}	Storage temperature		$-55 \sim +150$	°C
—	Weight	Typical value	1.2	g

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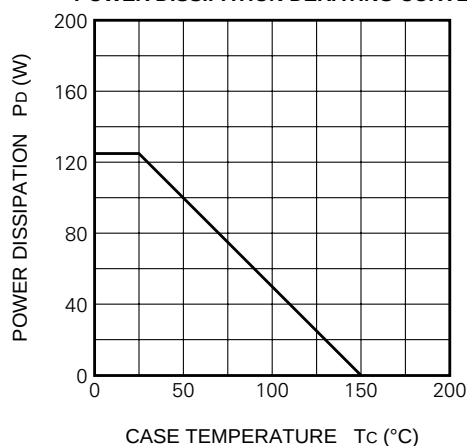
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ELECTRICAL CHARACTERISTICS (T_{ch} = 25°C)

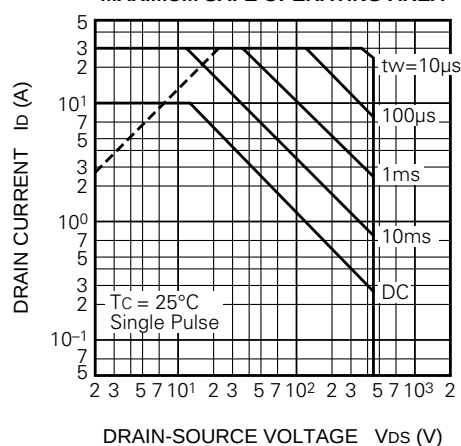
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V _{(BR)DSS}	Drain-source breakdown voltage	I _D = 1mA, V _{GS} = 0V	450	—	—	V
V _{(BR)GSS}	Gate-source breakdown voltage	I _G = ±100μA, V _{DS} = 0V	±30	—	—	V
I _{GSS}	Gate-source leakage current	V _{GS} = ±25V, V _{DS} = 0V	—	—	±10	μA
I _{DSS}	Drain-source leakage current	V _{DS} = 450V, 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 = 5A, V _{GS} = 10V	—	0.56	0.73	Ω
V _{DS(ON)}	Drain-source on-state voltage	I _D = 5A, V _{GS} = 10V	—	2.8	3.7	V
y _{fs}	Forward transfer admittance	I _D = 5A, V _{DS} = 10V	3.3	5.5	—	S
C _{iss}	Input capacitance	V _{DS} = 25V, V _{GS} = 0V, f = 1MHz	—	1100	—	pF
C _{oss}	Output capacitance		—	135	—	pF
C _{rss}	Reverse transfer capacitance		—	20	—	pF
t _{d(on)}	Turn-on delay time	V _{DD} = 200V, I _D = 5A, V _{GS} = 10V, R _{GEN} = R _{GS} = 50Ω	—	20	—	ns
t _r	Rise time		—	30	—	ns
t _{d(off)}	Turn-off delay time		—	95	—	ns
t _f	Fall time		—	35	—	ns
V _{SD}	Source-drain voltage	I _S = 5A, V _{GS} = 0V	—	1.5	2.0	V
R _{th(ch-c)}	Thermal resistance	Channel to case	—	—	1.0	°C/W

PERFORMANCE CURVES

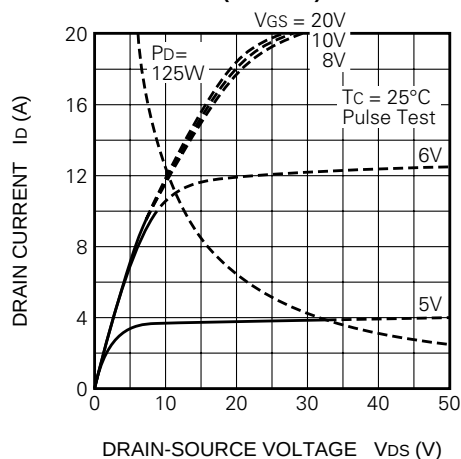
POWER DISSIPATION DERATING CURVE



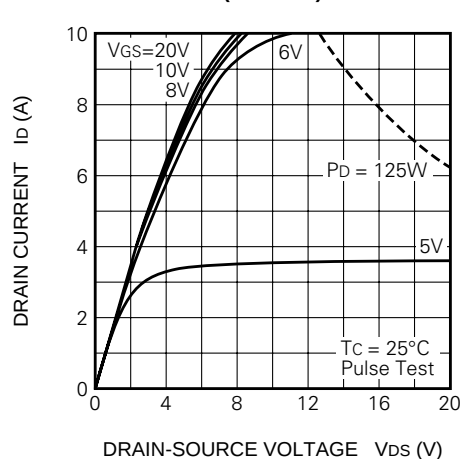
MAXIMUM SAFE OPERATING AREA



OUTPUT CHARACTERISTICS (TYPICAL)



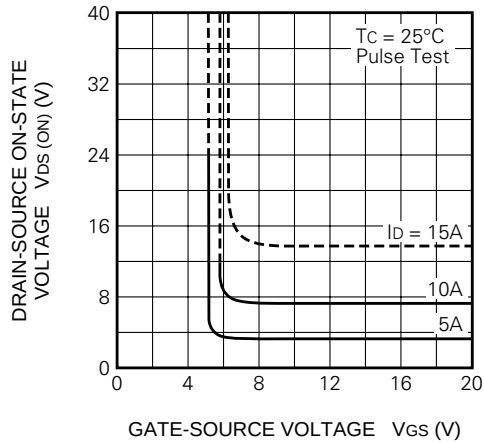
OUTPUT CHARACTERISTICS (TYPICAL)



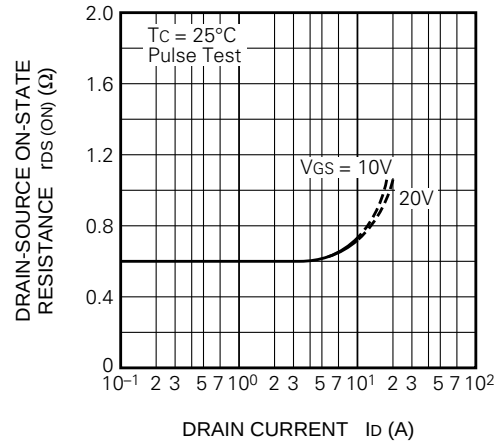
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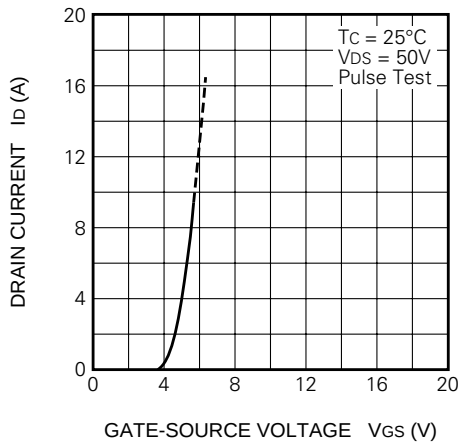
ON-STATE VOLTAGE VS.
GATE-SOURCE VOLTAGE
(TYPICAL)



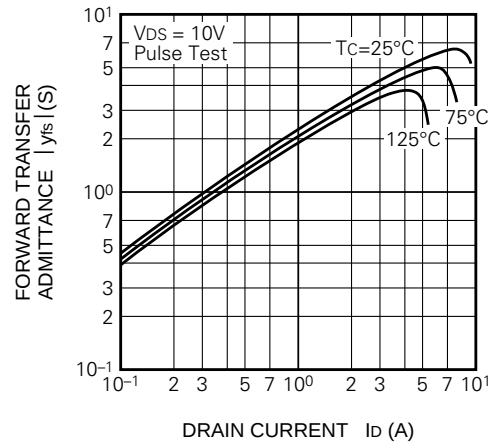
ON-STATE RESISTANCE VS.
DRAIN CURRENT
(TYPICAL)



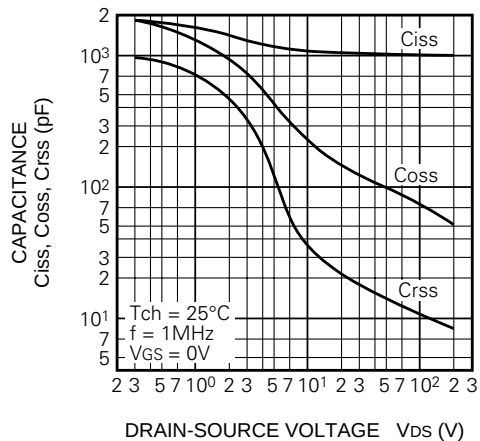
TRANSFER CHARACTERISTICS
(TYPICAL)



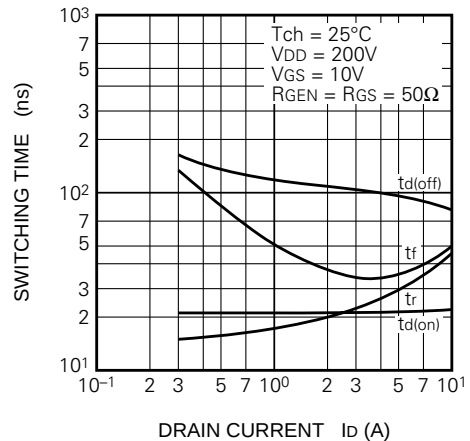
FORWARD TRANSFER ADMITTANCE
VS.DRAIN CURRENT
(TYPICAL)



CAPACITANCE VS.
DRAIN-SOURCE VOLTAGE
(TYPICAL)



SWITCHING CHARACTERISTICS
(TYPICAL)



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