

# FS10VS-9A

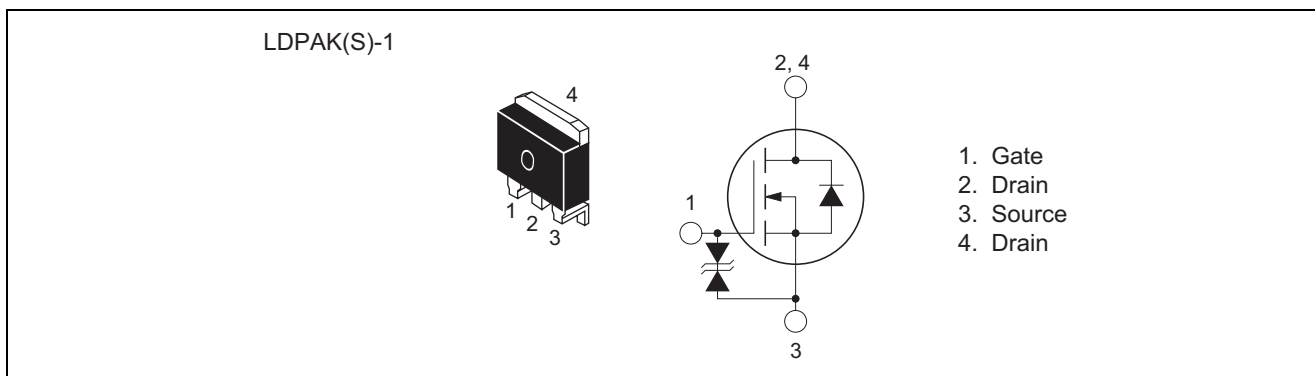
High-Speed Switching Use  
Nch Power MOS FET

REJ03G0268-0100  
Under development  
Rev.1.00  
Aug.20.2004

## Features

- Drive voltage : 10 V
- $V_{DSS}$  : 450 V
- $r_{DS(ON)(max)}$  : 0.73  $\Omega$
- $I_D$  : 10 A

## Outline



## Applications

DC-DC, PDP, lamp ballast, etc.

## Maximum Ratings

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

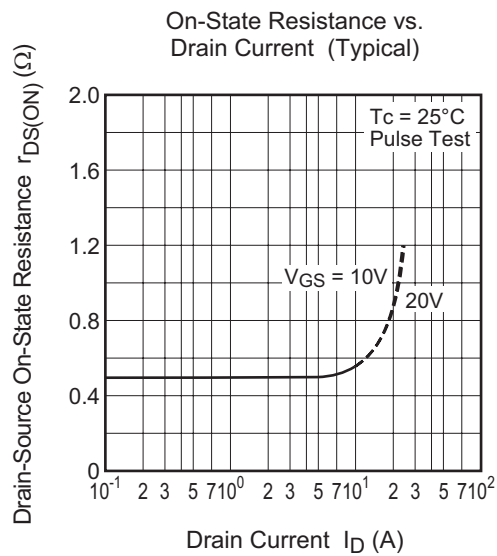
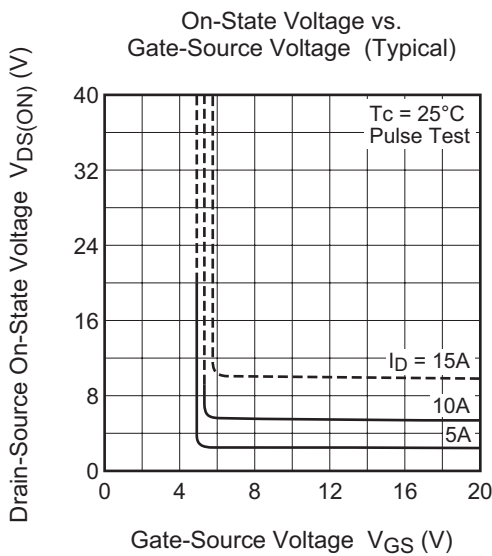
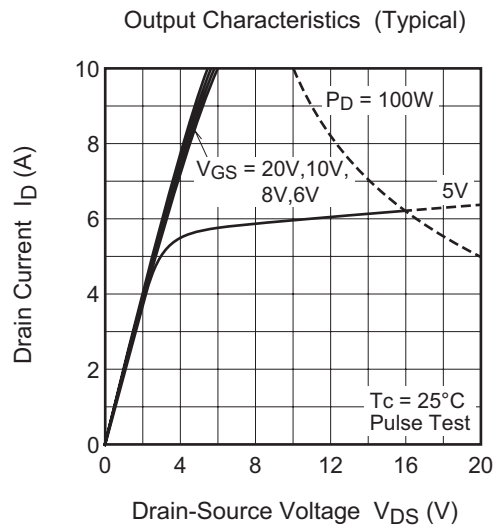
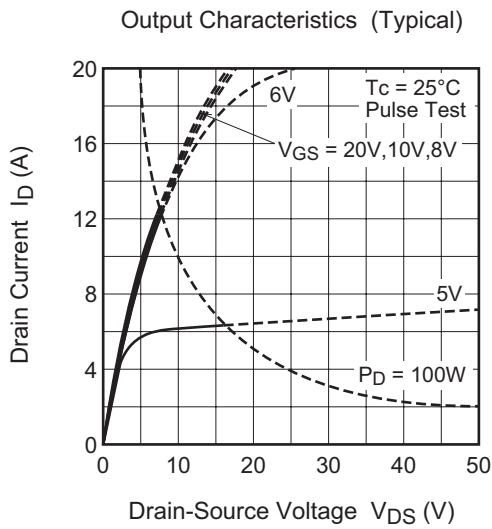
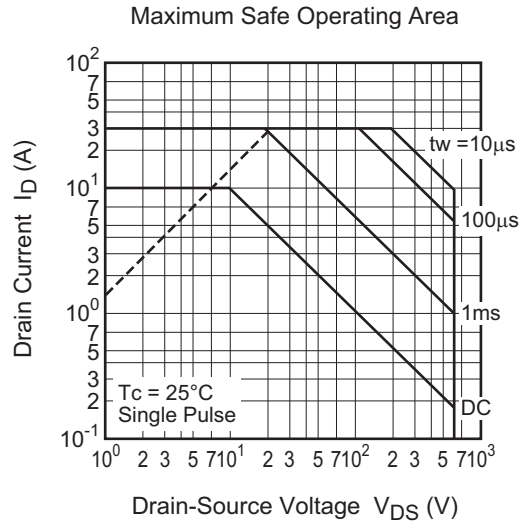
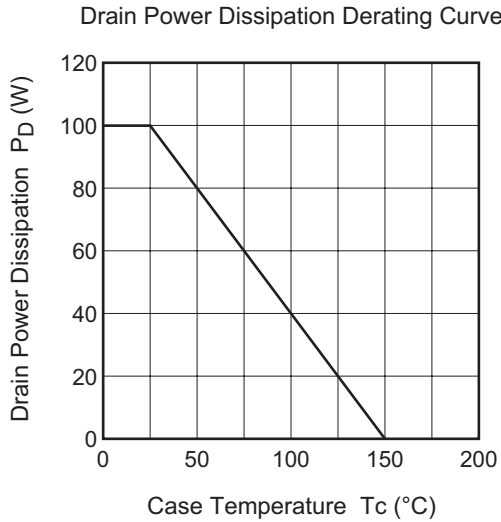
Parameter	Symbol	Ratings	Unit	Conditions
Drain-source voltage	$V_{DSS}$	450	V	$V_{GS} = 0\text{ V}$
Gate-source voltage	$V_{GSS}$	$\pm 30$	V	$V_{DS} = 0\text{ V}$
Drain current	$I_D$	10	A	
Drain current (Pulsed)	$I_{DM}$	30	A	
Avalanche current	$I_{DA}$	10	A	$L = 200\ \mu\text{H}$
Maximum power dissipation	$P_D$	100	W	
Channel temperature	$T_{ch}$	- 55 to +150	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	- 55 to +150	$^\circ\text{C}$	
Mass	—	1.2	g	Typical value

## Electrical Characteristics

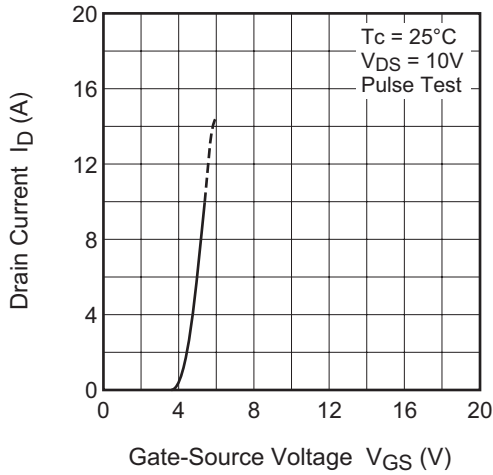
(T<sub>ch</sub> = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Drain-source breakdown voltage	$V_{(BR)DSS}$	450	—	—	V	$I_D = 1 \text{ mA}$ , $V_{GS} = 0 \text{ V}$
Gate-source breakdown voltage	$V_{(BR)GSS}$	$\pm 30$	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$ , $V_{DS} = 0 \text{ V}$
Gate-source leakage current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 25 \text{ V}$ , $V_{DS} = 0 \text{ V}$
Drain-source leakage current	$I_{DSS}$	—	—	1.0	mA	$V_{DS} = 450 \text{ V}$ , $V_{GS} = 0 \text{ V}$
Gate-source threshold voltage	$V_{GS(th)}$	2.5	3.0	3.5	V	$I_D = 1 \text{ mA}$ , $V_{DS} = 10 \text{ V}$
Drain-source on-state resistance	$r_{DS(ON)}$	—	0.58	0.73	$\Omega$	$I_D = 5 \text{ A}$ , $V_{GS} = 10 \text{ V}$
Drain-source on-state voltage	$V_{DS(ON)}$	—	2.90	3.65	V	$I_D = 5 \text{ A}$ , $V_{GS} = 10 \text{ V}$
Forward transfer admittance	$ y_{fs} $	5.4	9.0	—	S	$I_D = 5 \text{ A}$ , $V_{DS} = 10 \text{ V}$
Input capacitance	$C_{iss}$	—	1100	—	pF	$V_{DS} = 25 \text{ V}$ , $V_{GS} = 0 \text{ V}$ , $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	120	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	25	—	pF	
Turn-on delay time	$t_{d(on)}$	—	20	—	ns	$V_{DD} = 200 \text{ V}$ , $I_D = 5 \text{ A}$ , $V_{GS} = 10 \text{ V}$ , $R_{GEN} = R_{GS} = 50 \text{ }\Omega$
Rise time	$t_r$	—	30	—	ns	
Turn-off delay time	$t_{d(off)}$	—	140	—	ns	
Fall time	$t_f$	—	40	—	ns	
Source-drain voltage	$V_{SD}$	—	1.5	2.0	V	$I_S = 5 \text{ A}$ , $V_{GS} = 0 \text{ V}$
Thermal resistance	$R_{th(ch-c)}$	—	—	1.25	$^{\circ}\text{C/W}$	Channel to case

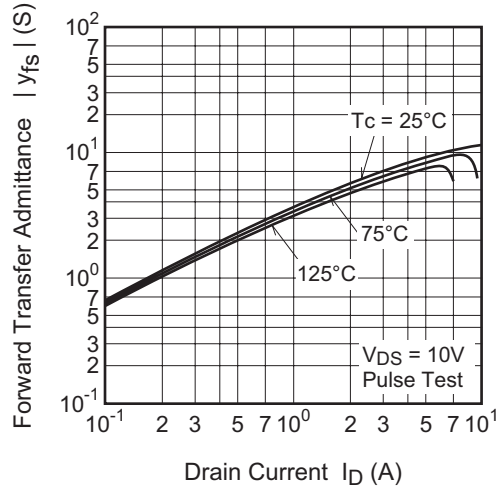
Performance Curves



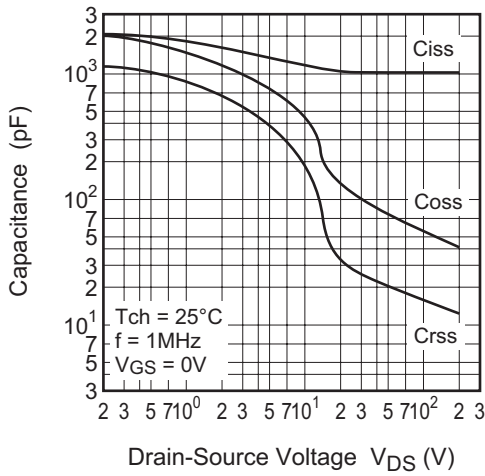
Transfer Characteristics (Typical)



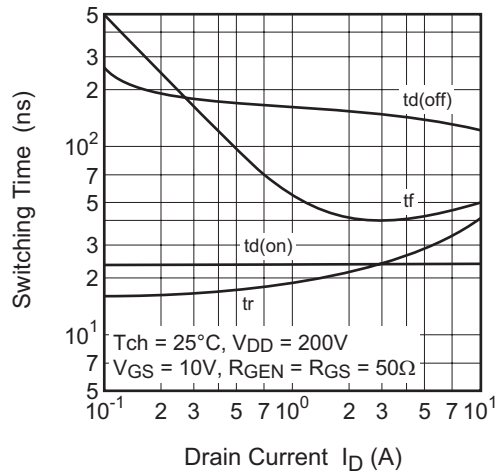
Forward Transfer Admittance vs. Drain Current (Typical)



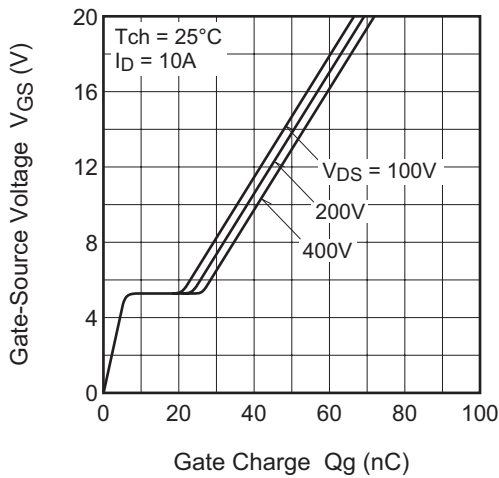
Capacitance vs. Drain-Source Voltage (Typical)



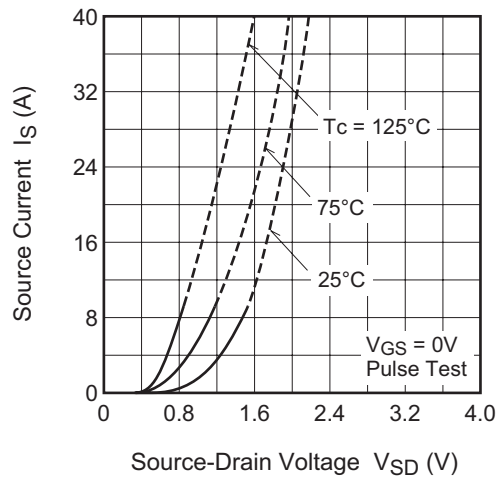
Switching Characteristics (Typical)

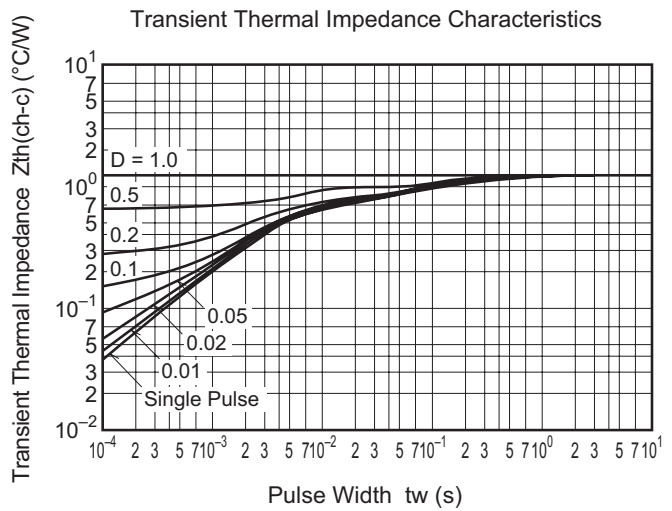
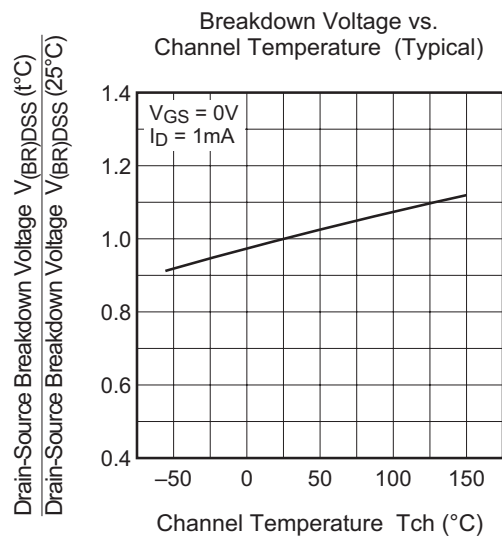
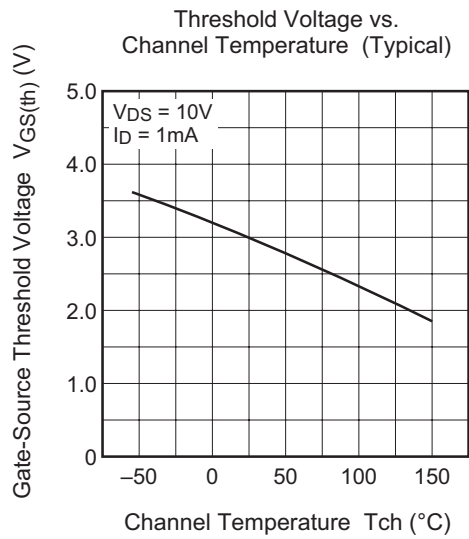
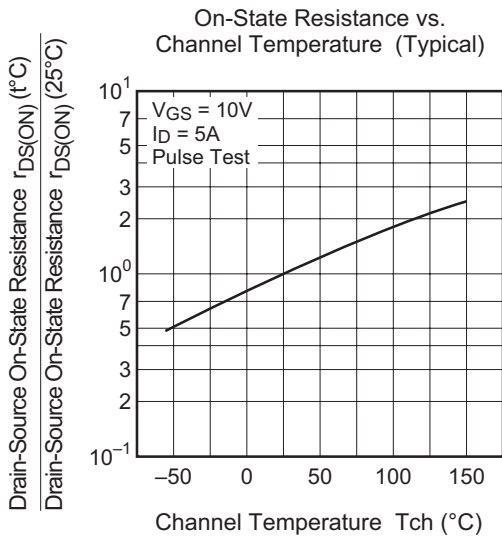


Gate-Source Voltage vs. Gate Charge (Typical)

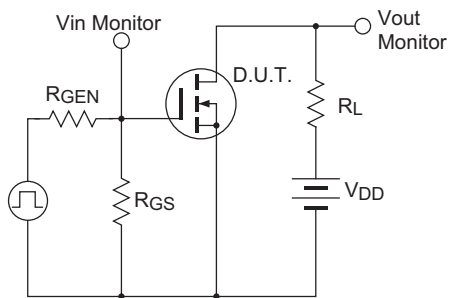


Source-Drain Diode Forward Characteristics (Typical)

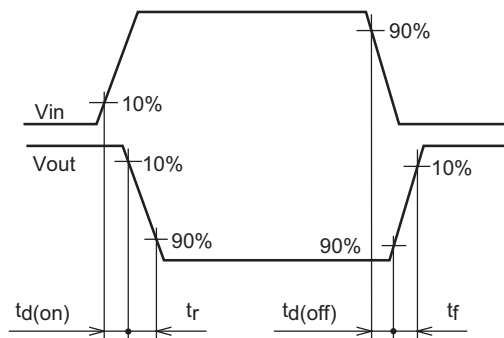




Switching Time Measurement Circuit

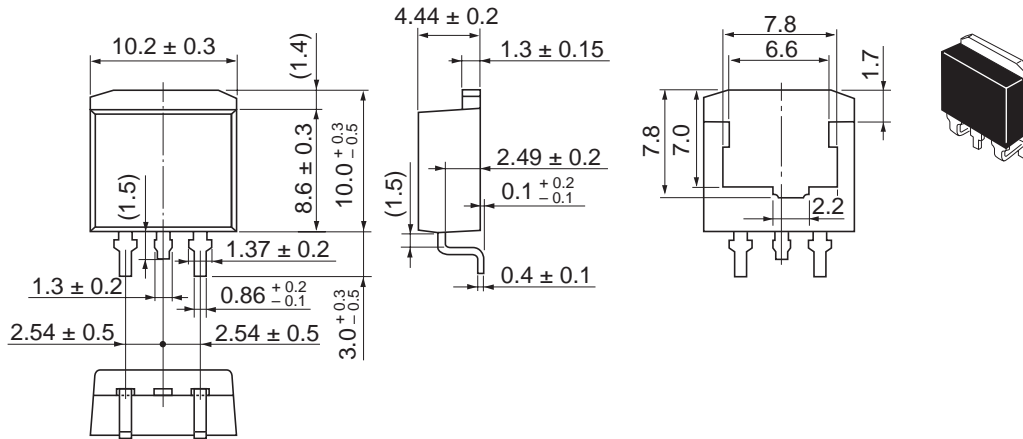


Switching Waveform



Package Dimensions

As of January, 2003  
Unit: mm



Package Code	LDPAK (S)-(1)
JEDEC	—
JEITA	—
Mass (reference value)	1.30 g

Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Surface-mounted type	Taping	1000	Type name – T +Direction (1 or 2) +1	FS10VS-9A-T11

Note : Please confirm the specification about the shipping in detail.

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