

18A, 650V N-CHANNEL MOSFET

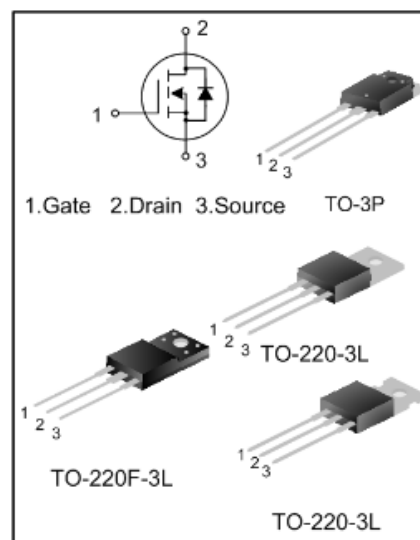
GENERAL DESCRIPTION

SVF18N65F/T/PN is an N-channel enhancement mode power MOS field effect transistor which is produced using Silan proprietary F-Cell™ high-voltage planar VDMOS technology. The improved process and cell structure have been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.

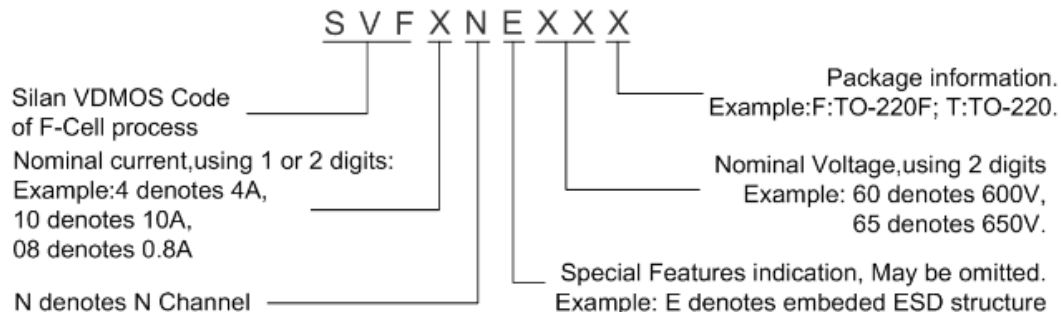
These devices are widely used in AC-DC power supplies, DC-DC converters and H-bridge PWM motor drivers.

FEATURES

- 18A,650V, $R_{DS(on)}$ (typ.)=0.48Ω@ V_{GS} =10V
- Low gate charge
- Low C_{rss}
- Fast switching
- Improved dv/dt capability



NOMENCLATURE



ORDERING INFORMATION

Part No.	Package	Marking	Hazardous Substance Control	Packing
SVF18N65F	TO-220F-3L	SVF18N65F	Pb free	Tube
SVF18N65T	TO-220-3L	SVF18N65T	Pb free	Tube
SVF18N65PN	TO-3P	18N65	Pb free	Tube

ABSOLUTE MAXIMUM RATINGS (T_C=25°C unless otherwise noted)

Characteristics		Symbol	Ratings			Unit
			SVF18N65F	SVF18N65T	SVF18N65PN	
Drain-Source Voltage		V _{DS}	650			V
Gate-Source Voltage		V _{GS}	±30			V
Drain Current	T _C =25°C	I _D	18			A
	T _C =100°C		11.4			
Drain Current Pulsed		I _{DM}	72			A
Power Dissipation(T _C =25°C) -Derate above 25°C		P _D	54	228	235	W
			0.43	1.82	1.88	W/°C
Single Pulsed Avalanche Energy (Note 1)		E _{AS}	1008			mJ
Operation Junction Temperature Range		T _J	-55~+150			°C
Storage Temperature Range		T _{stg}	-55~+150			°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Ratings			Unit
		SVF18N65F	SVF18N65T	SVF18N65PN	
Thermal Resistance, Junction-to-Case	R _{θJC}	2.31	0.55	0.53	°C/W
Thermal Resistance, Junction-to-Ambient	R _{θJA}	62.5	62.5	50.0	°C/W

ELECTRICAL CHARACTERISTICS (T_C=25°C unless otherwise noted)

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Drain -Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	650	--	--	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V	--	--	1.0	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±30V, V _{DS} =0V	--	--	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{GS} = V _{DS} , I _D =250μA	3.0	--	5.0	V
Static Drain-Source On State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =9.0A	--	0.48	0.55	Ω
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHZ	--	2706.3	--	pF
Output Capacitance	C _{oss}		--	233.3	--	
Reverse Transfer Capacitance	C _{rss}		--	1.8	--	
Turn-on Delay Time	t _{d(on)}	V _{DD} =325V, R _G =25Ω, I _D =18A (Note 2,3)	--	58.07	--	ns
Turn-on Rise Time	t _r		--	90.87	--	
Turn-off Delay Time	t _{d(off)}		--	58.13	--	
Turn-off Fall Time	t _f		--	51.20	--	
Total Gate Charge	Q _g	V _{DS} =520V, I _D =18A, V _{GS} =10V (Note 2,3)	--	37.08	--	nC
Gate-Source Charge	Q _{gs}		--	17.66	--	
Gate-Drain Charge	Q _{gd}		--	8.81	--	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Characteristics	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I_S	Integral Reverse P-N Junction	--	--	18	A
Pulsed Source Current	I_{SM}	Diode in the MOSFET	--	--	72	
Diode Forward Voltage	V_{SD}	$I_S=18A, V_{GS}=0V$	--	--	1.4	V
Reverse Recovery Time	T_{rr}	$I_S=18A, V_{GS}=0V,$	--	632.36	--	ns
Reverse Recovery Charge	Q_{rr}	$dI_F/dt=100A/\mu S$	--	8.26	--	μC

Notes:

1. $L=30mH, I_{AS}=8.2A, V_{DD}=100V, R_G=25\Omega$, starting $T_J=25^\circ C$;
2. Pulse Test: Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$;
3. Essentially independent of operating temperature.