

10A, 400V N-CHANNEL MOSFET

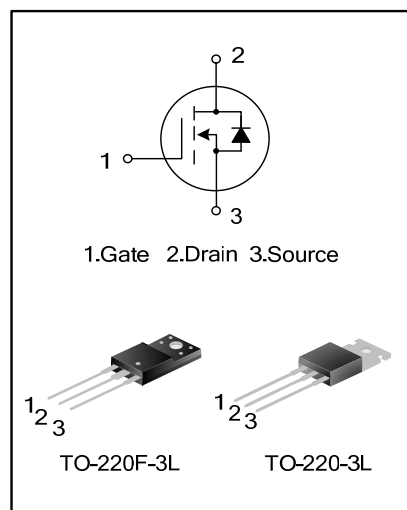
GENERAL DESCRIPTION

SVD740T/F is an N-channel enhancement mode power MOS field effect transistor which is produced using Silan proprietary S-Rin™ structure DMOS technology. The improved planar stripe cell and the improved guard ring terminal 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 suppliers, DC-DC converters and H-bridge PWM motor drivers.

FEATURES

- * 10A,400V,RDS(on) (typ) =0.45 Ω@VGS=10V
- * Low gate charge
- * Low Crss
- * Fast switching
- * Improved dv/dt capability



ORDERING SPECIFICATIONS

Part No.	Package	Marking	Material	Packing
SVD740T	TO-220-3L	SVD740T	Pb free	Tube
SVD740F	TO-220F-3L	SVD740F	Pb free	Tube

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

Parameter	Symbol	Rating		Unit
		SVD740T	SVD740F	
Drain-Source Voltage	VDS	400		V
Gate-Source Voltage	VGS	±30		V
Drain Current	ID	10		A
Power Dissipation(Tc=25°C) -Derate above 25°C	PD	160	52	W
		1.28	0.42	W/°C
Single Pulsed Avalanche Energy (Note 1)	EAS	384		mJ
Operation Junction Temperature	TJ	-55~+150		°C
Storage Temperature	Tstg	-55~+150		°C

THERMAL CHARACTERISTICS

Parameter	Symbol	Rating		Unit
		SVD740T	SVD740F	
Thermal Resistance, Junction-to-Case	R _{θJC}	0.64	0.93	°C/W
Thermal Resistance, Junction-to-Ambient	R _{θJA}	62.5	62.5	°C/W

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

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Drain -Source Breakdown Voltage	BVDSS	V _{GS} =0V, I _D =250μA	400	--	--	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =400V, V _{GS} =0V	--	--	10	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	2.0	--	4.0	V
Static Drain- Source On State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =5.0A	--	0.45	0.60	Ω
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHZ	--	1035	--	pF
Output Capacitance	C _{oss}		--	97	--	
Reverse Transfer Capacitance	C _{rss}		--	2	--	
Turn-on Delay Time	t _{d(on)}	V _{DD} =200V, I _D =10.0A, R _G =25Ω (Note 2,3)	--	39	--	ns
Turn-on Rise Time	t _r		--	29	--	
Turn-off Delay Time	t _{d(off)}		--	248	--	
Turn-off Fall Time	t _f		--	36	--	
Total Gate Charge	Q _g	V _{DS} =320V, I _D =10A, V _{GS} =10V (Note 2,3)	--	26.8	--	nC
Gate-Source Charge	Q _{gs}		--	5.1	--	
Gate-Drain Charge	Q _{gd}		--	8.5	--	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I _S	Integral Reverse P-N Junction Diode in the MOSFET	--	--	10	A
Pulsed Source Current	I _{SM}		--	--	32	
Diode Forward Voltage	V _{SD}	I _S =10A, V _{GS} =0V	--	--	1.5	V
Reverse Recovery Time	T _{rr}	I _S =10A, V _{GS} =0V, dI _F /dt=100A/μS (Note 2)	--	270	--	ns
Reverse Recovery Charge	Q _{rr}		--	1.9	--	μC

Notes:

1. L=30 mH, I_{AS}=4.11A, V_{DD}=250V, R_G=25Ω, starting T_J=25°C;
2. Pulse Test: Pulse width ≤300μs, Duty cycles≤2%;
3. Essentially independent of operating temperature.

TYPICAL CHARACTERISTICS

Figure 1. On-Region Characteristics

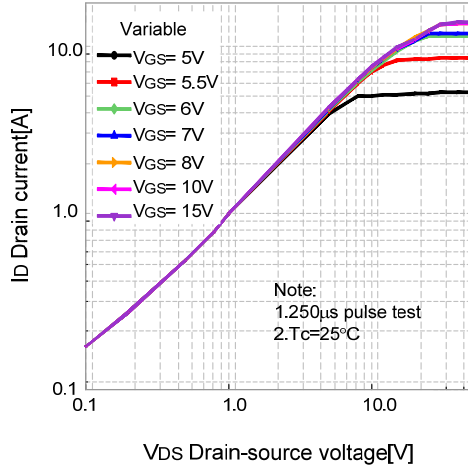


Figure 2. Transfer Characteristics

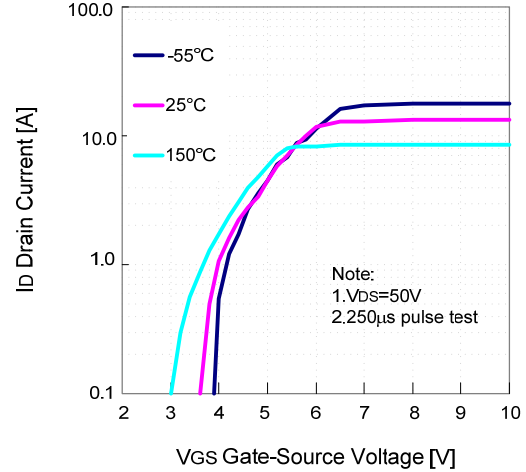


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

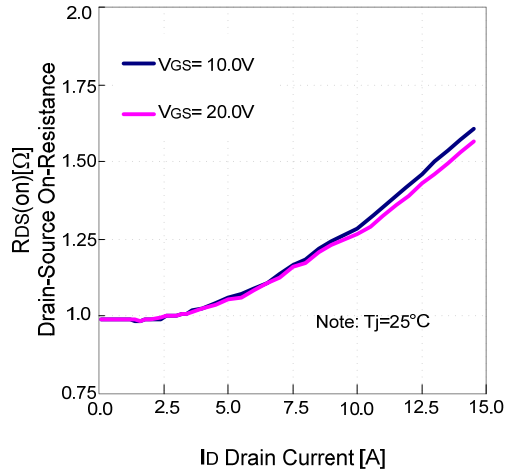
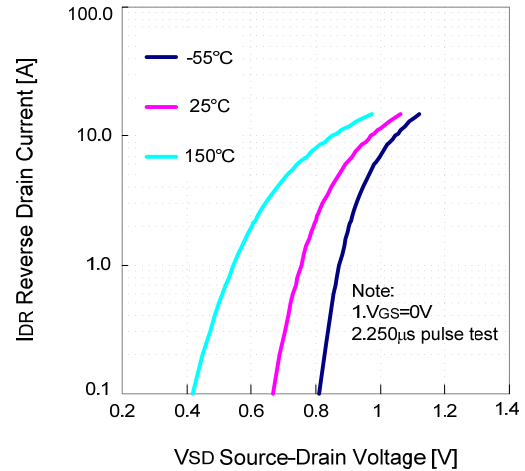


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and temperature



TYPICAL CHARACTERISTICS (continued)

Figure5. Breakdown Voltage Variation vs. Temperature

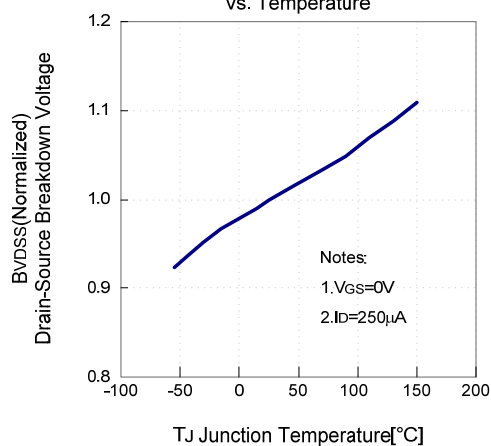


Figure 6. On-resistance Variation vs Temperature

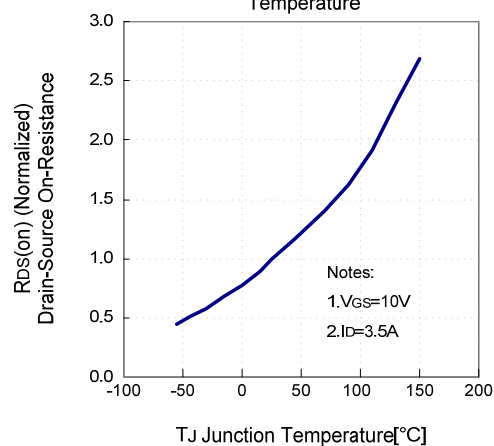
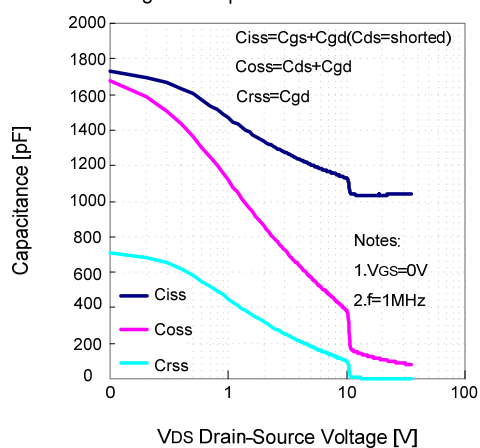
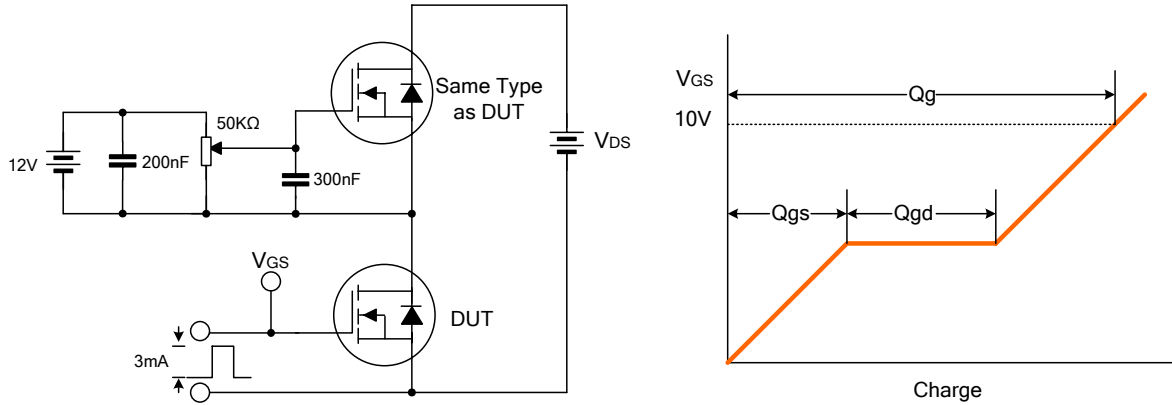


Figure 7 Capacitance Characteristics

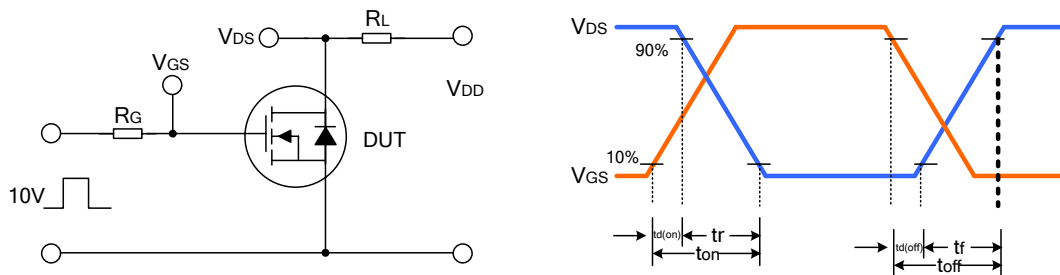


TYPICAL TEST CIRCUIT

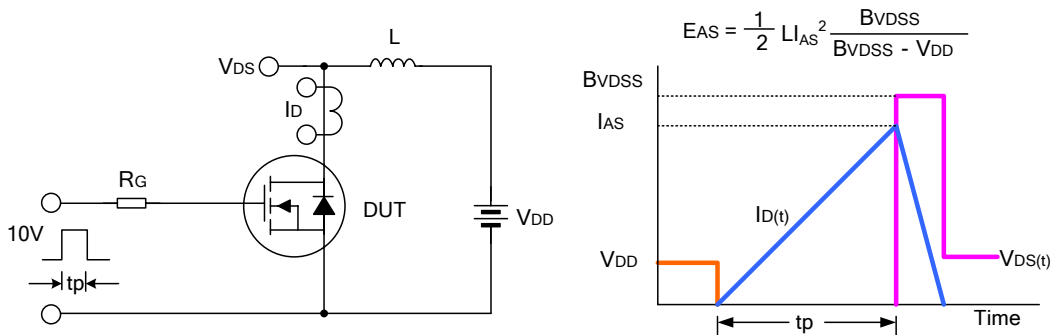
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveform



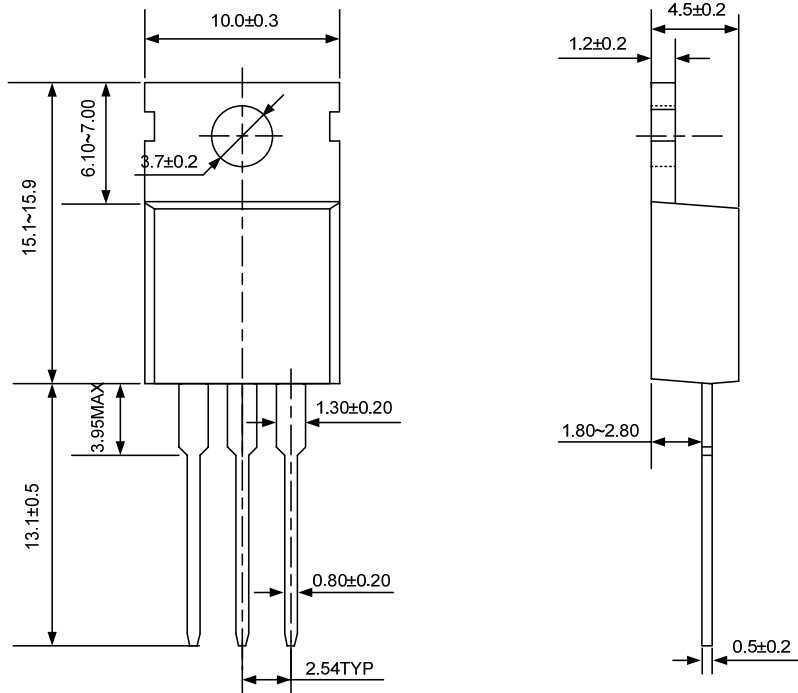
Unclamped Inductive Switching Test Circuit & Waveform



PACKAGE OUTLINE

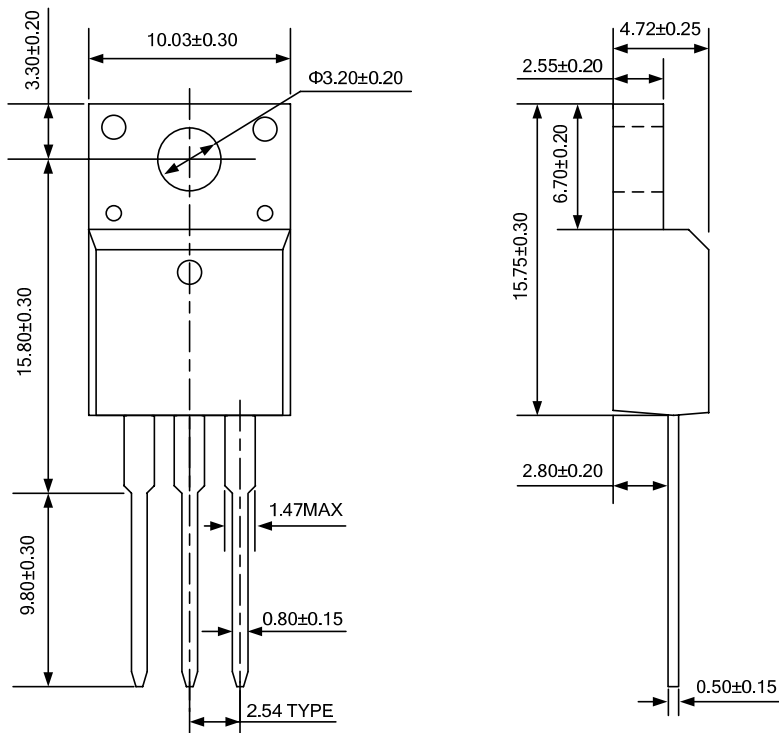
TO-220-3L

UNIT: mm



TO-220F-3L

UNIT: mm



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ATTACHMENT**Revision History**

Date	REV	Description	Page
2010.06.30	1.0	Original	
2010.10.29	1.1	Modify the template of datasheet	