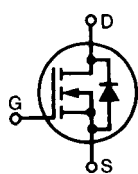


SMOS13N50A1

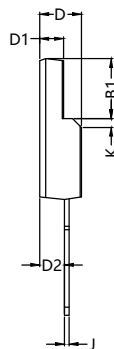
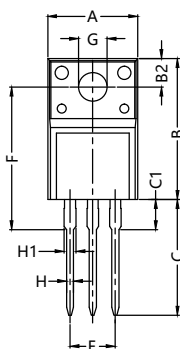
Power MOSFETs



G=Gate, D=Drain,
S=Source



Dimensions TO-220F



Dim.	Millimeter		Dim.	Millimeter	
	Min.	Max.		Min.	Max.
A	9.80	10.60	D2	2.30	3.30
B	15.40	16.40	E	5.08BSC	
B1	6.00	7.40	F	14.50	16.00
B2	3.20	3.80	ØG	2.90	3.40
C	12.80	13.50	H	0.60	1.00
C1	3.20	4.00	H1	1.15	1.55
D	4.35	4.95	J	0.35	0.65
D1	2.24	2.84	K	0.00	1.60

Symbol	Test Conditions	Maximum Ratings	Unit
V _{DSS}	T _J =25°C to 150°C	500	V
V _{DGR}	T _J =25°C to 150°C; R _{GS} =1MΩ	500	
V _{GS}	Continuous	±20	V
V _{GSM}	Transient	±30	
I _{D25}	T _C =25°C	13	A
I _{D100}	T _C =100°C	8.2	
I _{DM}	T _C =25°C; pulse width limited by T _{JM}	52	A
I _{AR}	T _C =25°C	13	A
E _{AR}	T _C =25°C	19.6	mJ
dv/dt	I _S ≤I _{DM} ; di/dt≤100A/us; V _{DD} ≤V _{DSS} T _J ≤150°C; R _G =2Ω	5	V/ns
P _D	T _C =25°C	170	W
T _J		-55...+150	°C
T _{JM}		150	
T _{stg}		-55...+150	
T _L	1.6mm(0.062 in.) from case for 10s	300	°C
M _d	Mounting torque	1.13/10	Nm/lb.in.
Weight	typical	1.5	g



Sirectifier®

SMOS13N50A1

Power MOSFETs

(T_J=25°C, unless otherwise specified)

Symbol	Test Conditions	Characteristic Values			Unit
		min.	typ.	max.	
V _{DSS}	V _{GS} =0V; I _D =250μA	500			V
V _{GS(th)}	V _{DS} =V _{GS} ; I _D =0.25mA	2		4	V
I _{GSS}	V _{GS} =±20V _{DC} ; V _{DS} =0			±100	nA
I _{DSS}	V _{DS} =0.8V _{DSS} ; T _J =25°C			1	μA
	V _{GS} =0V; T _J =125°C			10	μA

(T_J=25°C, unless otherwise specified)

Symbol	Test Conditions	Characteristic Values			Unit
		min.	typ.	max.	
R _{DS(on)}	V _{GS} =10V; I _D =0.5I _{D25} Pulse test, t≤300μs, duty cycle≤2%		0.40	0.55	Ω
g _{ts}	V _{DS} =10V; I _D =0.5I _{D25} ; pulse test	11	15		S
C _{ies} C _{oes} C _{res}	V _{GS} =0V; V _{DS} =25V; f=1MHz		1600 185 20		pF
Q _{g(on)} Q _{gs} Q _{gd}	V _{GS} =10V; V _{DS} =0.5V _{DSS} ; I _D =0.5I _{D25}		43 8 19		nC
t _{d(on)} t _r t _{d(off)} t _f	V _{GS} =10V; V _{DS} =0.5V _{DSS} ; I _D =0.5I _{D25} R _G =2Ω (External)		25 100 130 100	55 210 270 210	ns ns ns ns
R _{thJC}				2.15	K/W
R _{thCS}				1.71	K/W

Source-Drain Diode

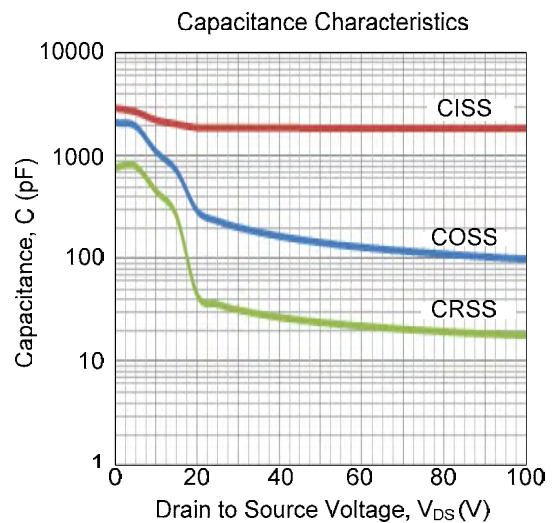
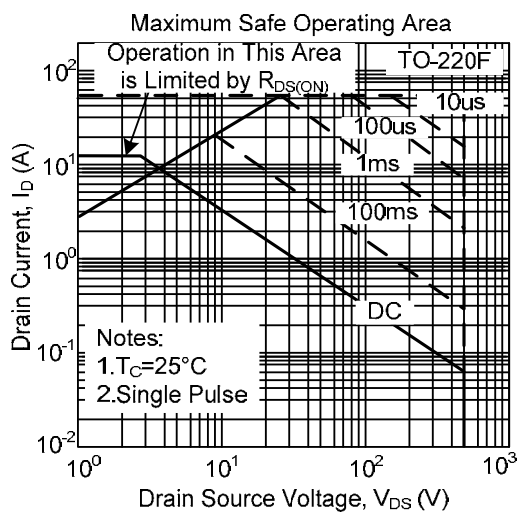
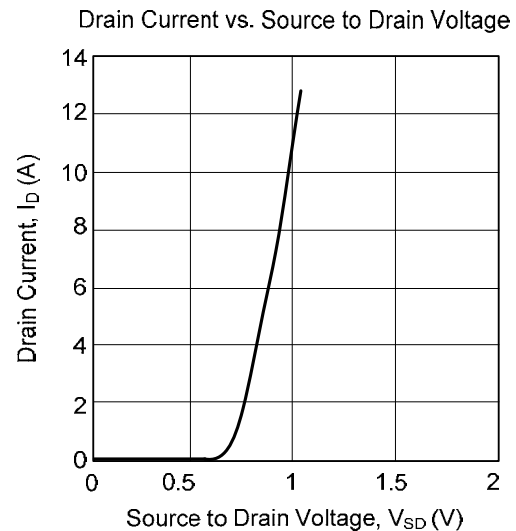
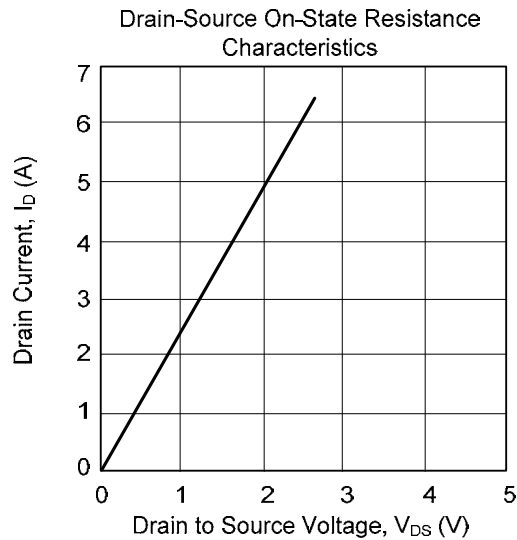
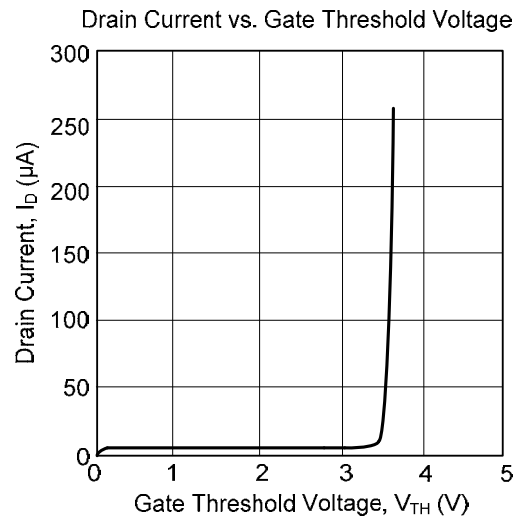
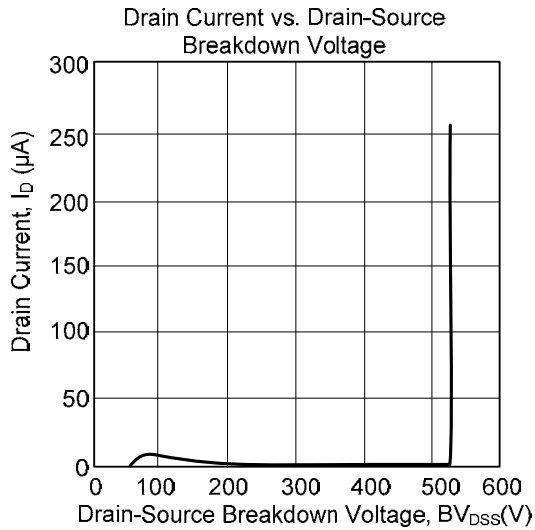
(T_J=25°C, unless otherwise specified)

Symbol	Test Conditions	Characteristic Values			Unit
		min.	typ.	max.	
I _S	V _{GS} =0V			13	A
I _{SM}	Repetitive; pulse width limited by T _{JM}			52	A
V _{SD}	I _F =I _S ; V _{GS} =0V; Pulse test, t≤300μs, duty cycle d≤2%			1.5	V
t _{rr}	I _F =I _S ; T _J =25°C		112		ns
Q _{rr}	-di/dt=100A/μs; T _J =25°C		0.35		μC
I _{RM}	V _R =100V; T _J =25°C		8.6		A

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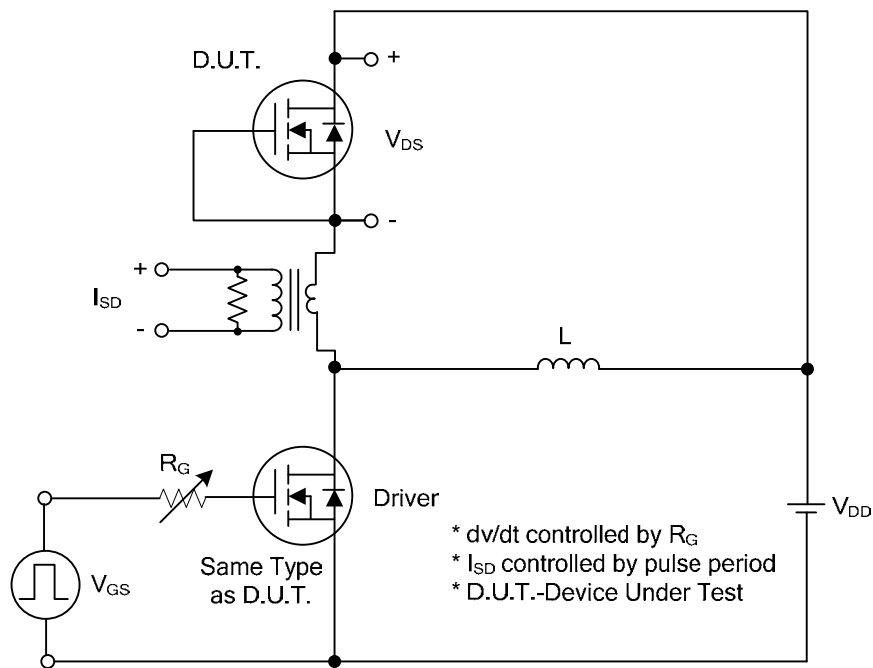
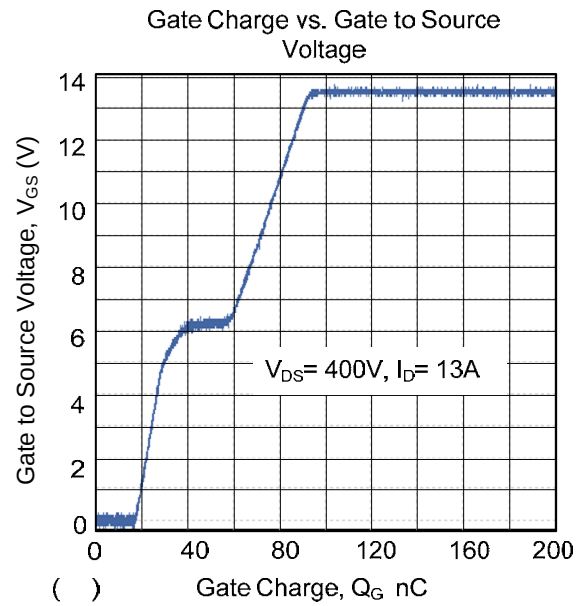
SMOS13N50A1

Power MOSFETs



SMOS13N50A1

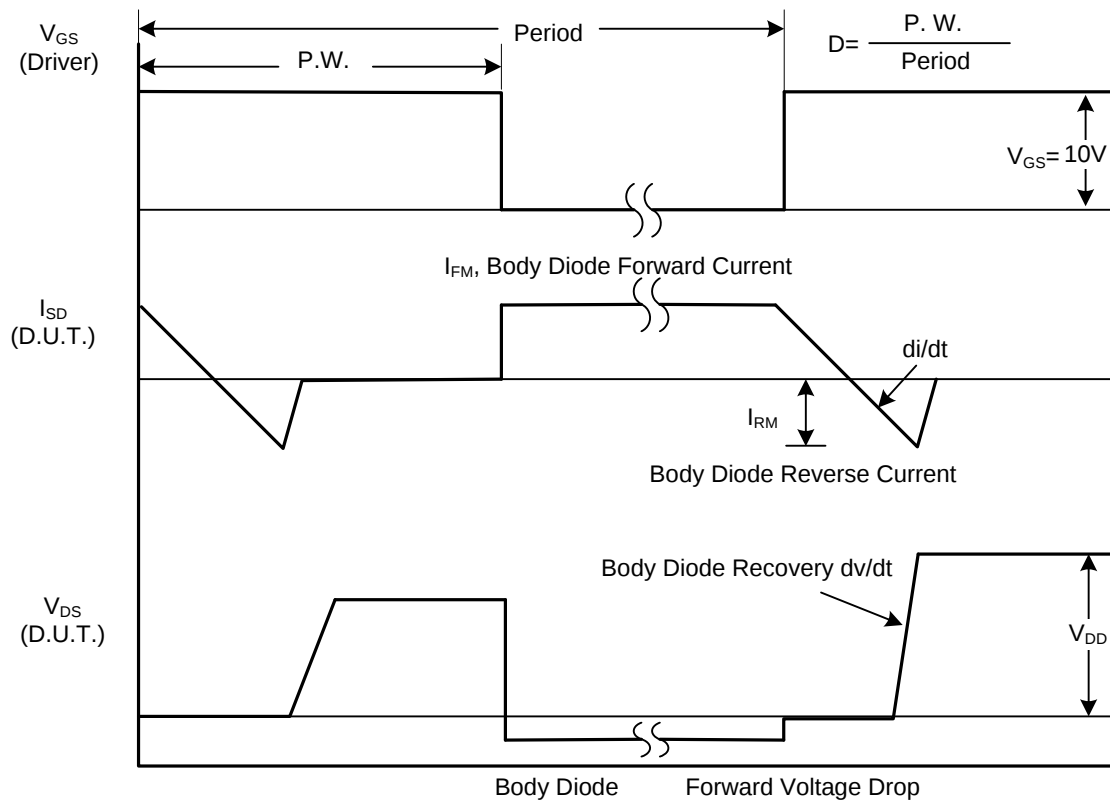
Power MOSFETs



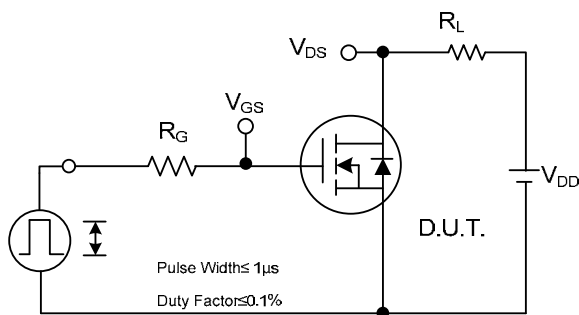
Peak Diode Recovery dv/dt Test Circuit

SMOS13N50A1

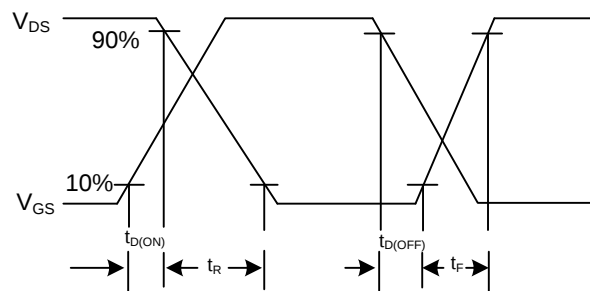
Power MOSFETs



Peak Diode Recovery dv/dt Waveforms



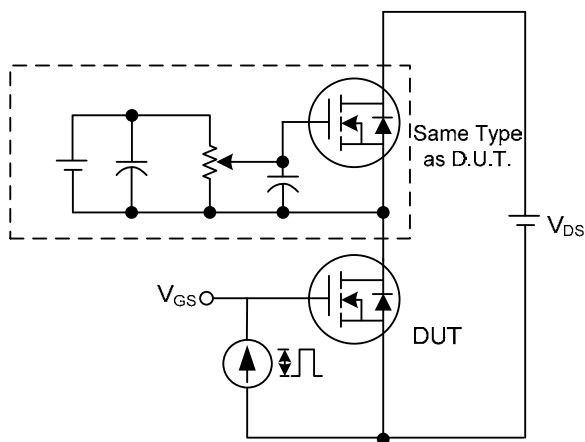
Switching Test Circuit



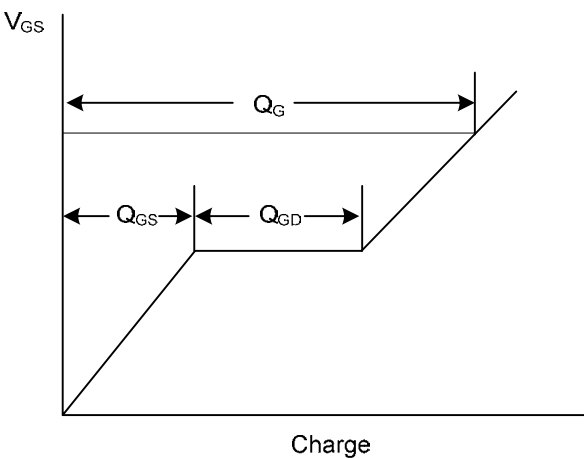
Switching Waveforms

SMOS13N50A1

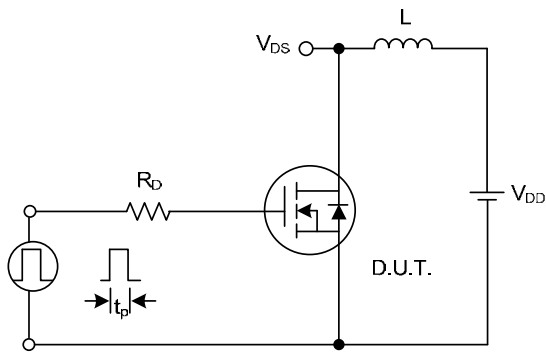
Power MOSFETs



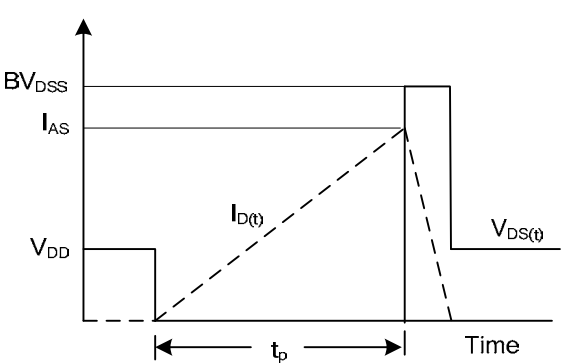
Gate Charge Test Circuit



Gate Charge Waveform

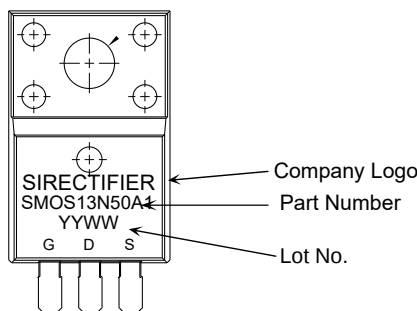


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

Marking



ORDERING INFORMATION

Part Number	Package	Shipping	Marking Code
SMOS13N50A1	TO-220F-3L	50pcs / Tube	SMOS13N50A1