FM5N50 N-Channel Power Mosfet

FM5N50 Features

- 500V,5A
  Ros <ON) <1.5 Q@VGs=10V TYP:1.25 Q
- Fast Switching
- Lead free product is acquired
- Excellent Ros <ON) and Low Gate Charge

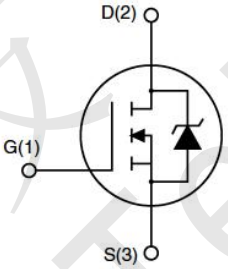
FM5N50 Application

- PWM applications
- Load Switch
- Power management

FM5N50 Package

Marking and pin assignment

TO-252top view



Schematic diagram

FM5N50 Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity （PCS）
FM5N50	FM5N50	TO-252	13 inch	-	2500

FM5N50 Absolute Maximum Ratings (Tc=25℃unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	Vos	500	V
Gate-Source Voltage	VGs	±30	V
Continuous Drain Current (Ta =25'C)	lo	5	A
Continuous Drain Current (Ta =100"C)	lo	3	A
Pulsed Drain Current (1l	loM	20	A
Single Pulsed Avalanche Energy <2>	EAs	88	mJ
Power Dissipation	Po	54	w
Thermal Resistance from Junction to Case	ReJc	2.13	℃/W
Junction Temperature	TJ	150	℃/
Storage Temperature	TsrG	-55~+150	℃/

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FM5N50 Electrical Characteristics (T_j=25℃unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}= 0V,I_D =250μA	500	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =500V, V_{GS} = 0V	-	-	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±30V, V_{DS} = 0V	-	-	±100	nA
Gate threshold voltage(3)	$V_{GS(th)}$	V_{DS} =V_{GS},I_D =250μA	2	3.3	4	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS}=10V,I_D =2.5A	-	1.25	1.5	Ω
Forward tranconductance(3)	g_{FS}	V_{DS}=10V,I_D =0.25A	1	-	-	S
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =25V, V_{GS} =0V, f =1MHz	-	650	-	pF
Output Capacitance	C_{oss}		-	57	-	
Reverse Transfer Capacitance	C_{rss}		-	13	-	
Switching characteristics						
Turn-off delay time	$t_{d(off)}$	V_{DD}=250V,I_D=5A,V_{GS}=10V, R_G=25Ω	-	20	-	ns
Total Gate Charge	Qg	VDS=400V,ID=5A, VGS=10V	-	26	-	nC
Gate-Source Charge	Qgs		-	4	-	
Gate-Drain Charge	Qgd		-	15	-	
Source-Drain Diode characteristics						
Diode Forward voltage(3)	V_{DS}	V_{GS} =0VI_S=5A	-	-	1.4	V
Diode Forward current(4)	I_S		-	-	5	A
Body Diode Reverse Recovery Time	trr	T_J=25 。, IF=5A,di/dt=100A/us		220		ns
Body Diode Reverse Recovery Charge	Qrr	T_J=25 。, IF=5A,di/dt=100A/us		1.0		uc

Notes:

1. Repetitive Rating: pulse width limited by maximum junction temperature
2. EAS Condition:TJ=25°C,Voo=50V,RG=2.0 Q ,L=10mH
3. Pulse Test: pulse width::.300μs, duty cycle::.2%
4. Surface Mounted on FR4 Board,t::.10 sec

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FM5N50 Typical Performance Characteristics

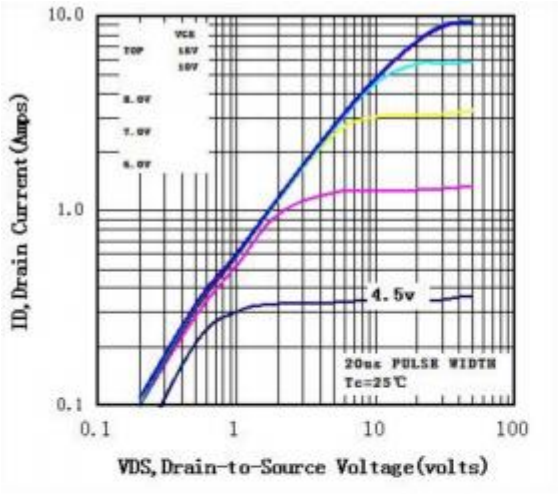

Fig1 Typical Output Characteristics, Tc=25℃

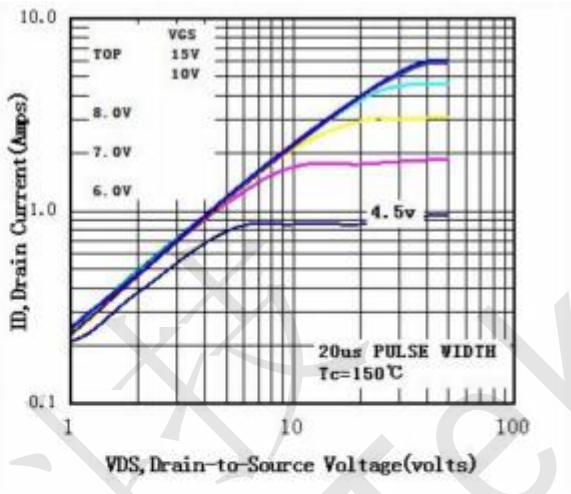

Fig2 Typical Output Characteristics, Tc=150℃

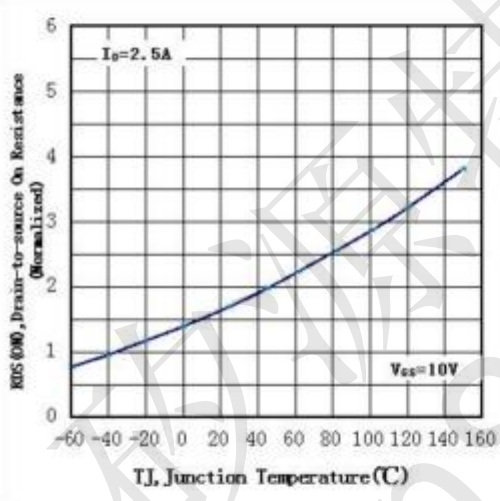

Fig3 Normalized Resistance Vs.Temperature

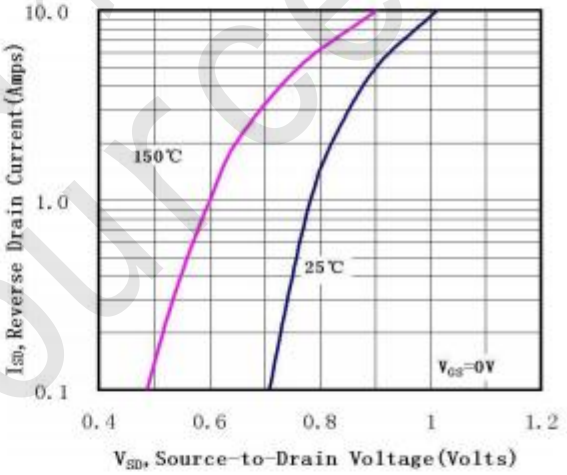

Fig4 Typical Source-Drain Diode Forward Voltage

Fig5 Maximum Drain Current Vs.Case Temperature

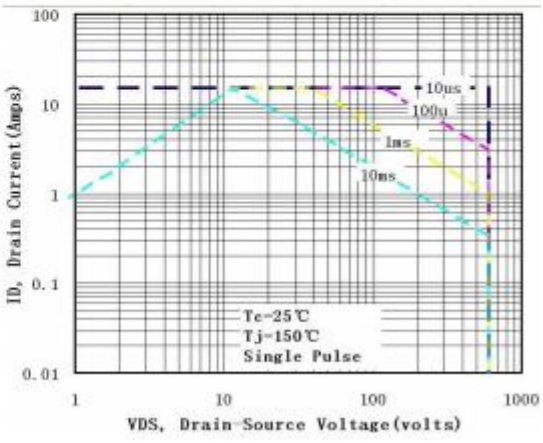

Fig6 Maximum Safe Operating Area

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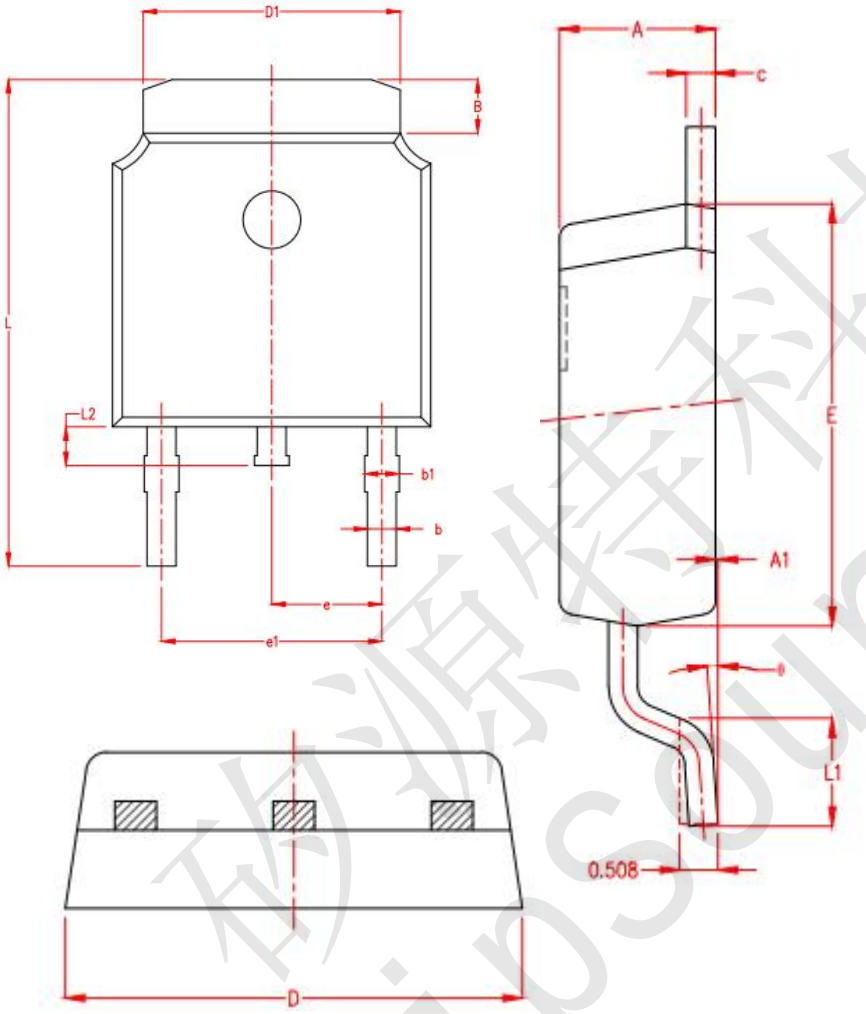
FM5N50 TO-252 Package Information



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	2.15	2.25	2.35
A1	0.00	0.06	0.12
B	0.96	1.11	1.26
b	0.59	0.69	0.79
b1	0.69	0.81	0.93
c	0.34	0.42	0.50
D	6.45	6.60	6.75
D1	5.23	5.33	5.43
E	5.95	6.10	6.25
e	2.286TYP.		
e1	4.47	4.57	4.67
L	9.90	10.10	10.30
L1	1.40	1.55	1.70
L2	0.60	0.80	1.00
θ	0°	4°	8°