HM1P15PR

Power MOSFET Datasheet

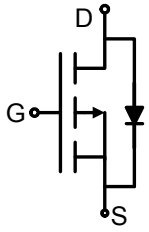
P-Channel Enhancement Mode MOSFET

FEATURES

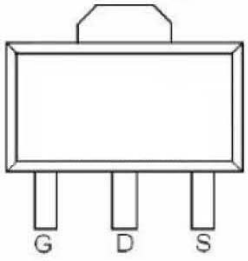
- R_{DSON} < 900 mΩ@V_{GS} = -10 V
- R_{DSON} < 1000 mΩ@V_{GS} = -4.5V
- Gross Die = 12000

APPLICATIONS

- Battery Charge
- Load Switching
- Power Converter



Schematic diagram



SOT-89-3L top view

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-150	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous @ T_A =25°C	I_D	-1	A
Drain Current-Pulsed @ T_A =25°C Note1	I_{DM}	-3	A
Maximum Power Dissipation	P_D	2.1	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance, Junction-to-Ambient Note2	$R_{\theta JA}$	60	°C/W

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

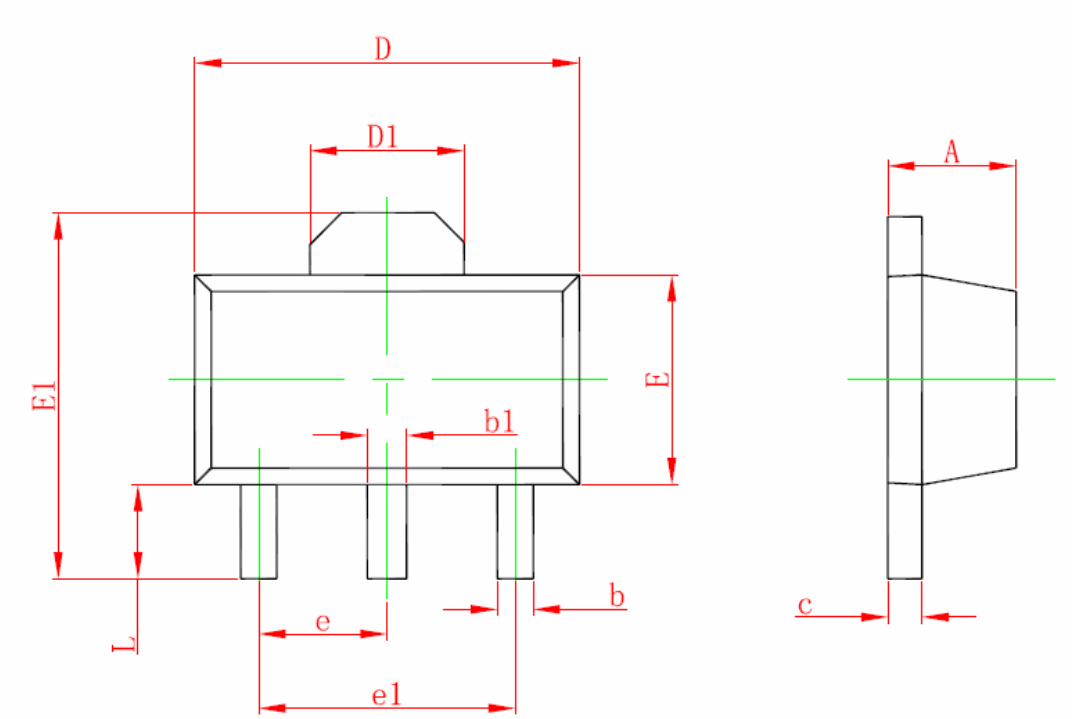
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OFF Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V，I_{DS}=-250μA	-150	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V，V_{DS}=-120V	-	-	-1	uA
Gate-Body Leakage	I_{GSS}	V_{GS}=±20V，V_{DS}=0V	-	-	±100	nA
ON Characteristics						
Gate Threshold Voltage	V_{TH}	V_{DS}=V_{GS}，I_{DS}=-250μA	-1	-	-2.0	V
Drain-Source On-State Resistance	R_{DS}	V_{GS}=-10V，I_{DS}=-1A	-	780	900-	mΩ
		V_{GS}=-4.5V，I_{DS}=-1A	-	880	1000-	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-75V	-	750	-	pF
Output Capacitance	C_{oss}	V_{GS}=0V	-	48	-	
Reverse Transfer Capacitance	C_{rss}	Freq.=1MHz	-	20	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=-75V V_{GS}=-10V R_G=3Ω	-	12	-	ns
Rise Time	t_r		-	32	-	
Turn-Off Delay Time	$t_{d(off)}$		-	30	-	
Fall Time	t_f		-	10	-	
Total Gate Charge at 10V	Q_g	V_{DS}=-75V V_{GS}=-10V I_{DS}=-1A	-	20	-	nC
Gate to Source Gate Charge	Q_{gs}		-	5	-	
Gate to Drain “Miller” Charge	Q_{gd}		-	8	-	
Drain-Source Diode Characteristics						
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V，I_S=-1A	-0.4	-	-1.0	V

Notes:

1. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

2. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design while $R_{\theta CA}$ is determined by the user's board design. $R_{\theta JA}$ shown below for single device operation on FR-4 in still air.

SOT-89-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

Notes

1. All dimensions are in millimeters.
2. Tolerance ±0.10mm (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.