

P-Channel Enhancement Mode MOSFET

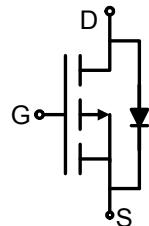
FEATURES

- ◆ $R_{DS(\text{Typ.})} < 250 \text{ m}\Omega @ V_{GS} = -10 \text{ V}$
- ◆ $R_{DS(\text{Typ.})} < 300 \text{ m}\Omega @ V_{GS} = -4.5\text{V}$
- ◆ Gross Die = 9600

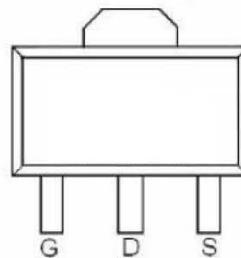
APPLICATIONS

- ◆ Battery Charge
- ◆ Load Switching
- ◆ Power Converter

....



Schematic diagram



SOT-89-3L top view

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous @ $T_A = 25^\circ\text{C}$	I_D	-5	A
Drain Current-Pulsed @ $T_A = 25^\circ\text{C}$ <small>Note1</small>	I_{DM}	-15	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 <small>Note2</small>	$R_{\theta JA}$	60	°C/W

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

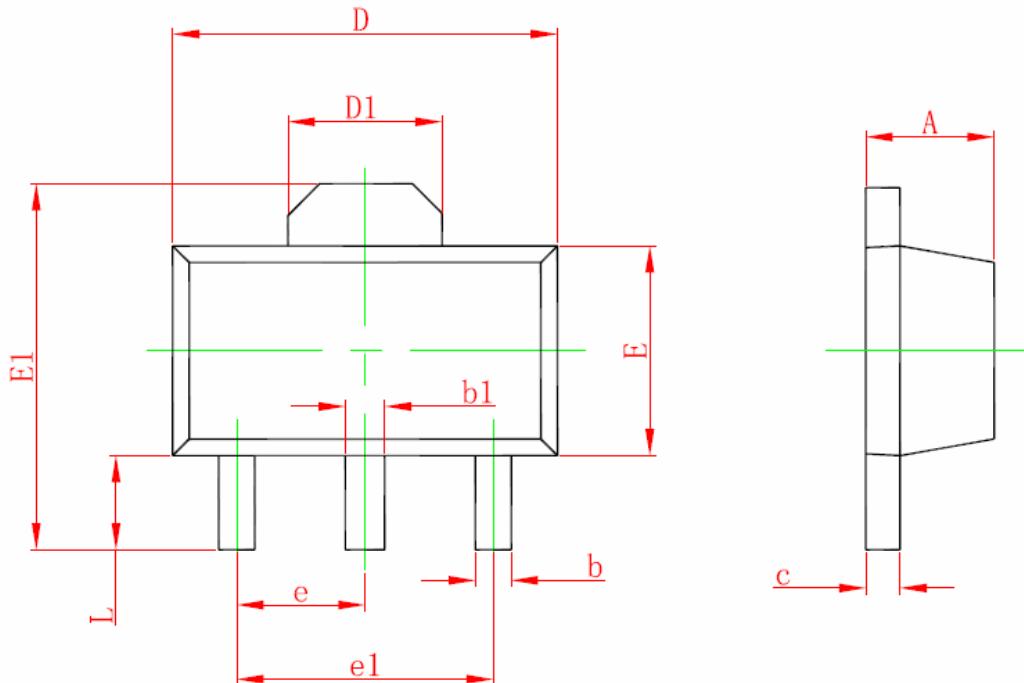
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OFF Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{\text{GS}}=0\text{V}$, $I_{\text{DS}}=-250\mu\text{A}$	-100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{\text{GS}}=0\text{V}$, $V_{\text{DS}}=-80\text{V}$	-	-	-1	μA
Gate-Body Leakage	I_{GSS}	$V_{\text{GS}}=\pm20\text{V}$, $V_{\text{DS}}=0\text{V}$	-	-	±100	nA
ON Characteristics						
Gate Threshold Voltage	V_{TH}	$V_{\text{DS}}=V_{\text{GS}}$, $I_{\text{DS}}=-250\mu\text{A}$	-1	-	-2.0	V
Drain-Source On-State Resistance	R_{DS}	$V_{\text{GS}}=-10\text{V}$, $I_{\text{DS}}=-2\text{A}$	-	-	250-	$\text{m}\Omega$
		$V_{\text{GS}}=-4.5\text{V}$, $I_{\text{DS}}=-2\text{A}$	-	-	300-	
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{\text{DS}}=-50\text{V}$ $V_{\text{GS}}=0\text{V}$ Freq.=1MHz	-	890	-	pF
Output Capacitance	C_{oss}		-	60	-	
Reverse Transfer Capacitance	C_{rss}		-	25	-	
Switching Characteristics						
Turn-On Delay Time	$t_{\text{d(on)}}$	$V_{\text{DS}}=-50\text{V}$ $V_{\text{GS}}=-10\text{V}$ $R_{\text{G}}=3\Omega$	-	12	-	ns
Rise Time	t_r		-	32	-	
Turn-Off Delay Time	$t_{\text{d(off)}}$		-	30	-	
Fall Time	t_f		-	10	-	
Total Gate Charge at 10V	Q_g	$V_{\text{DS}}=-50\text{V}$ $V_{\text{GS}}=-10\text{V}$ $I_{\text{DS}}=-5\text{A}$	-	24	-	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}	$V_{\text{GS}}=0\text{V}$, $I_s=-1\text{A}$	-0.4	-	-1.0	V

Notes:

- Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.
- R_{JJC} 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_{JJC} is guaranteed by design while R_{SCA} is determined by the user's board design. R_{JJA} 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 $\pm 0.10\text{mm}$ (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.

.....
...