

-30V P-Channel Trench Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-30V	36mΩ@-10V	-7A
	40mΩ@-4.5V	

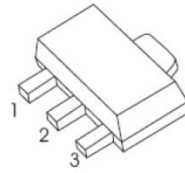
Features

- Low Gate Charge
- High Power and current handing capability
- Lead free product is acquired

Applications

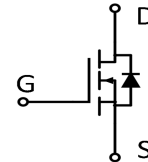
- Load Switch
- PWM Applications
- Power Management

SOT-89-3L



PIN1:GATE
PIN2:DRAIN
PIN3:SOURCE

Schematic diagram



Marking



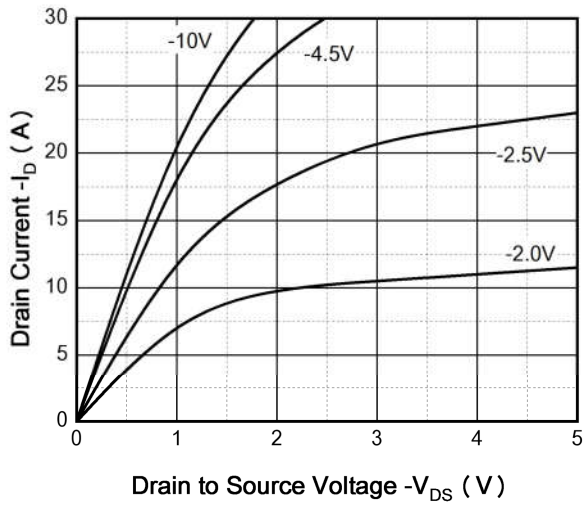
Absolute Maximum rating ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±12	V
Drain Current	$T_C = 25^\circ\text{C}$	I_D	-7	A
	$T_C = 100^\circ\text{C}$		-5	A
Drain Current - Pulsed		I_{DM}	-28	A
Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	1.2	W
Thermal Resistance, Junction-to-Ambient		$R_{\theta JA}$	105	$^\circ\text{C/W}$
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

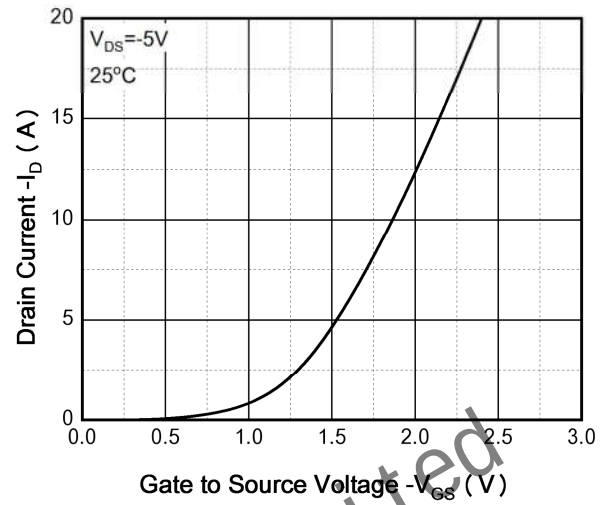
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}= 0V, I_D= -250\mu A$	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}= -30V, V_{GS}= 0V$			1	μA
Gate - Body Leakage Current	I_{GSS}	$V_{GS}= \pm 12V, V_{DS}= 0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}= V_{GS}, I_D= -250\mu A$	-0.6	-0.9	-1.3	V
Drain-source On-resistance	$R_{DS(on)}$	$V_{GS}= -10V, I_D= -4A$		36	50	m Ω
		$V_{GS}= -4.5V, I_D= -3A$		40	60	
		$V_{GS}= -2.5V, I_D= -1A$		52	68	
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}= -15V, V_{GS}= 0V, f= 1MHz$		750		pF
Output Capacitance	C_{oss}			75		
Reverse Transfer Capacitance	C_{rss}			60		
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS}= -15V, V_{GS}= -4.5V, I_D= -3A$		8		nC
Gate-source Charge	Q_{gs}			2		
Gate-drain Charge	Q_{gd}			2		
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}= -15V, V_{GS}= -4.5V, I_D= -3A, R_G= 3\Omega$		8		ns
Turn-on Rise Time	t_r			15		
Turn-off Delay Time	$t_{d(off)}$			45		
Turn-off Fall Time	t_f			35		
Source - Drain Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS}= 0V, I_S= -1A$			-1.2	V

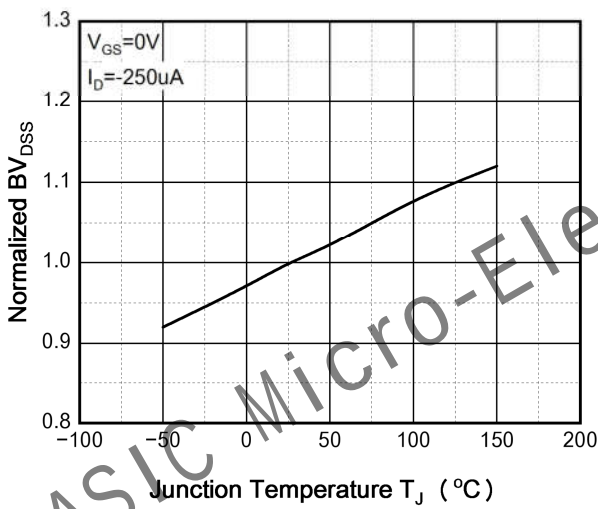
Typical Characteristic



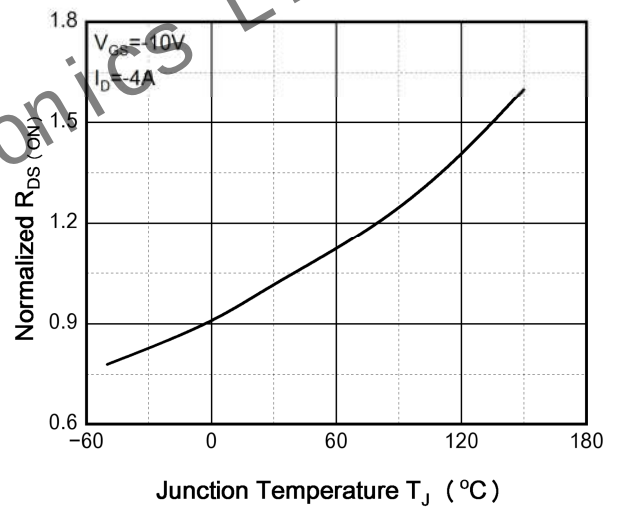
Output Characteristics



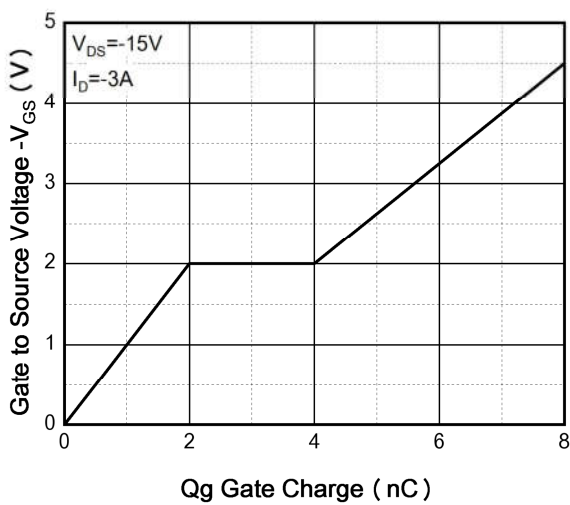
Transfer Characteristics



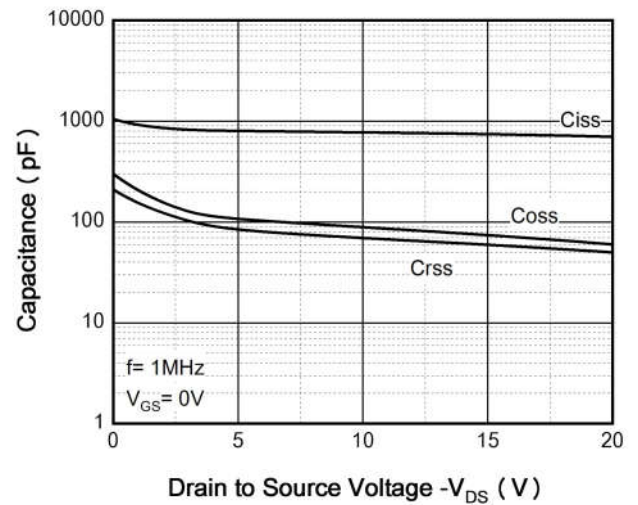
BV_{DS} vs Junction Temperature



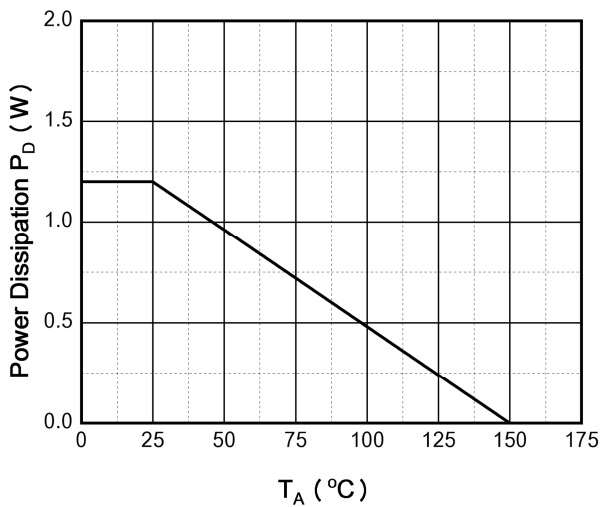
$R_{DS(ON)}$ vs Junction Temperature



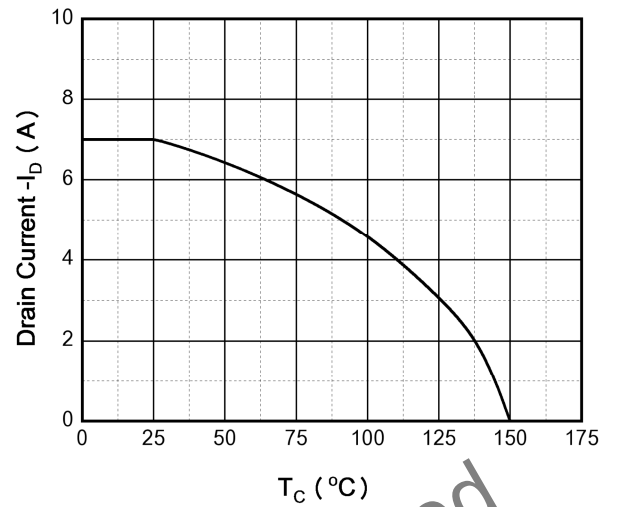
Gate Charge Characteristics



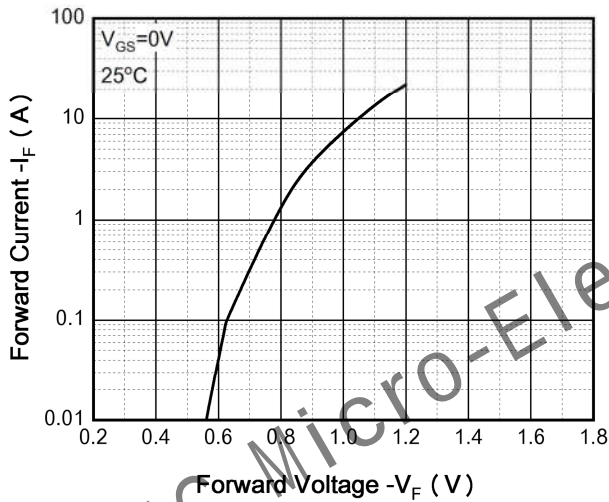
Capacitance Characteristics



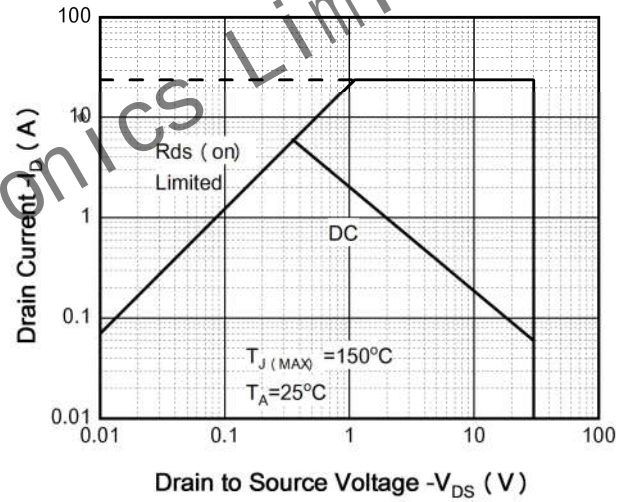
Power Dissipation



Drain Current



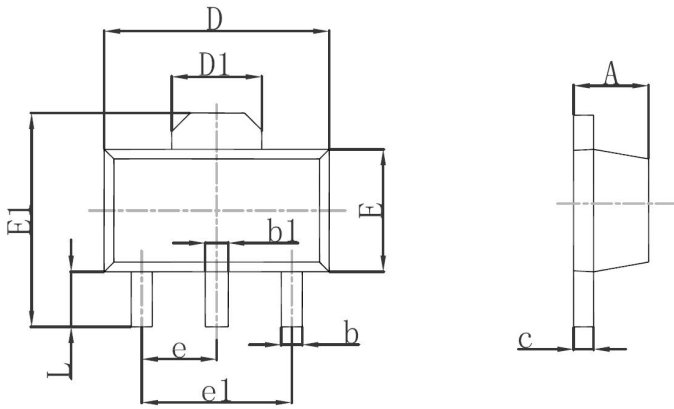
Body-Diode Characteristics



Maximum Safe Operating Area

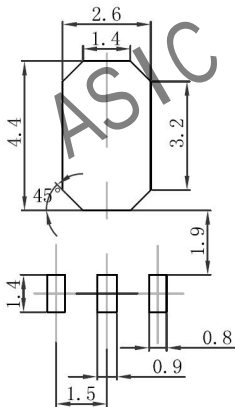
Dimension

SOT-89-3L



Symbol	Millimeters		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

Recommended Land Pattern



Note:

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference only
4. Unit: mm