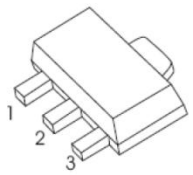
600V N-Channel Enhancement Mode Power MOSFET

Product Summary

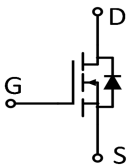
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
600V	8.5Ω@10V	1A

SOT-89-3L

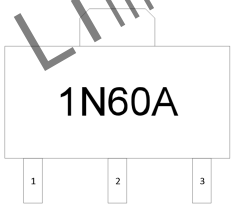


1:GATE
2:DRAIN
3:SOURCE

Schematic diagram



Marking



Features

- Low gate charge
- High ruggedness
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability

Applications

- PWM Application
- Load Switch
- Power Management

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Absolute Maximum rating（T_A = 25℃ unless otherwise noted）

Parameter		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	600	V
Gate-Source Voltage		V_{GS}	±30	V
Drain Current	T_C = 25℃	I_D	1	A
Drain Current - Pulsed[1]		I_{DM}	4	A
Single Pulsed Avalanche Energy[2]		E_{AS}	22	mJ
Thermal Resistance, Junction-to-Case		$R_{\theta JC}$	15.6	℃/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	℃

Electrical Characteristics（T_A = 25℃ unless otherwise noted）

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D= 250μA	600			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 600V, V_{GS}= 0V			1	μA
Gate - Body Leakage Current	I_{GSS}	V_{GS}= ±30V, V_{DS}= 0V			±0.1	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D= 250μA	2	3	4	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D = 0.5A		8.5	10	Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0 MHz		151		pF
Output Capacitance	C_{oss}			13		
Reverse Transfer Capacitance	C_{rss}			0.8		
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = 480 V, I_D = 1A, V_{GS} = 10 V		18		nC
Gate-source Charge	Q_{gs}			1.8		
Gate-drain Charge	Q_{gd}			1.5		
Turn-on Delay Time	$t_{d(on)}$	V_{DS} = 300 V, V_{GS} = 10V, I_D = 1 A, R_G = 25 Ω		2.6		ns
Turn-on Rise Time	t_r			3.3		
Turn-off Delay Time	$t_{d(off)}$			9.3		
Turn-off Fall Time	t_f			4.35		
Source - Drain Diode Characteristics						
Drain to Source Diode Forward Voltage	V_{SD}	V_{GS} = 0V, I_{SD} = 1A,T_J = 25℃			1.2	V
Reverse Recovery Time	t_{rr}	V_{DS} = 400 V, V_{GS} = 0 V, I_S =2A, dI_F / dt = 100 A/us		45		ns
Reverse Recovery Charge	Q_{rr}			0.63		uC

Notes:

1. Drain current limited by maximum junction temperature.
2. E_{AS} condition: T_J =25℃, V_{DD} =50V, V_G =10V, R_G =25Ω, L=10mH

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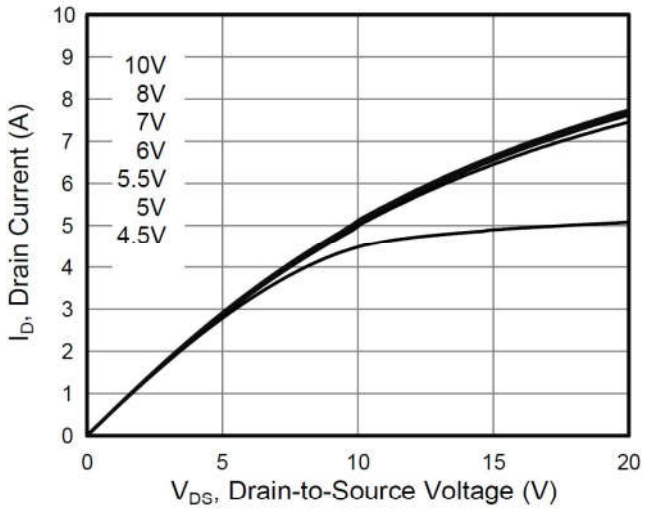
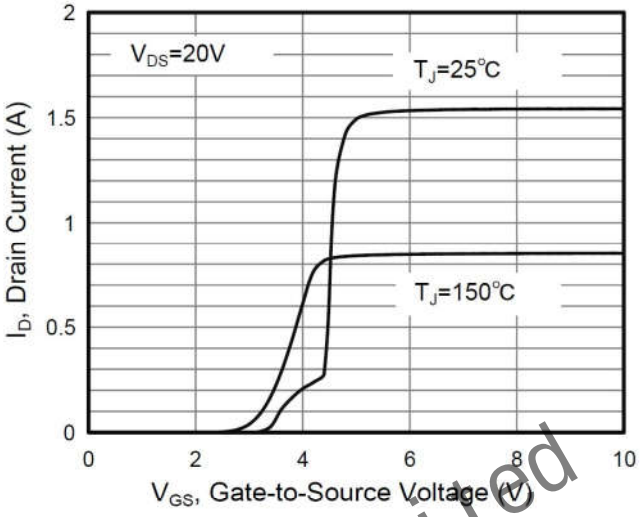
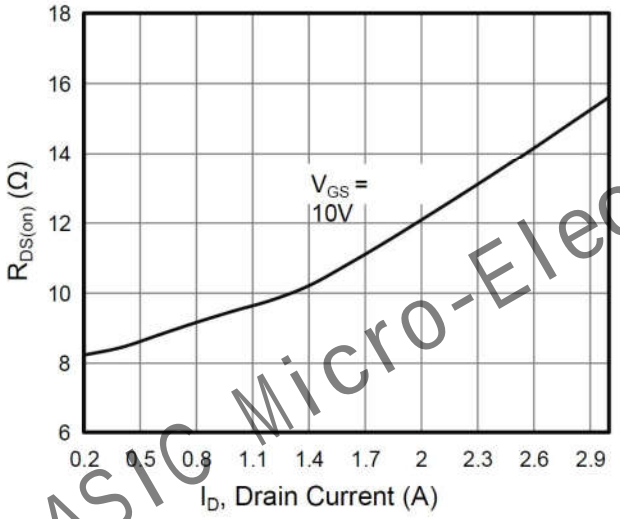
Typical Characteristic



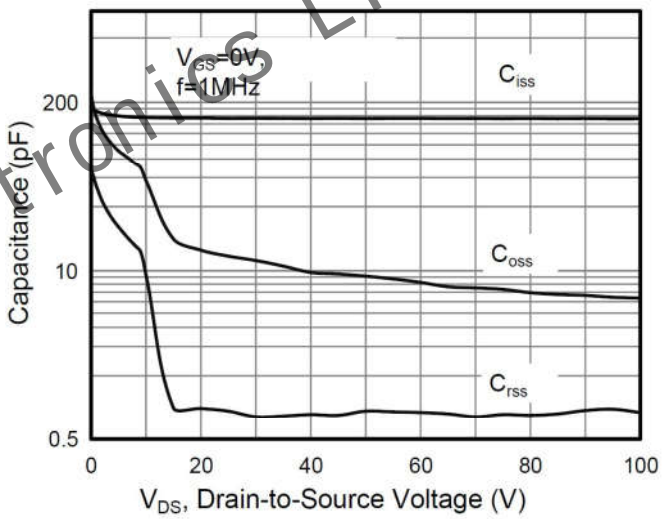
Output Characteristics



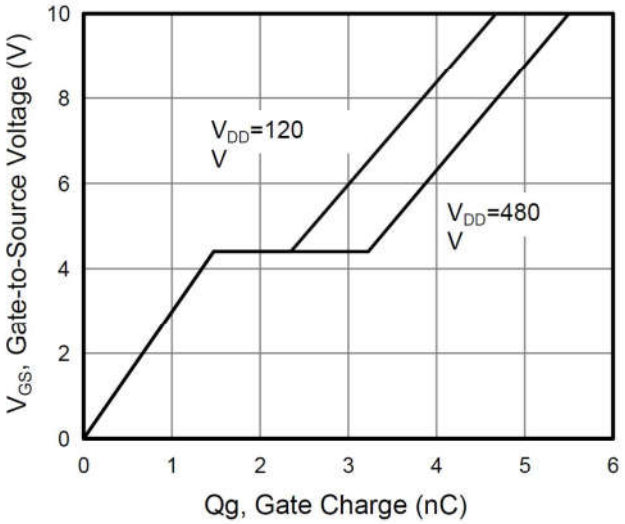
Transfer Characteristics



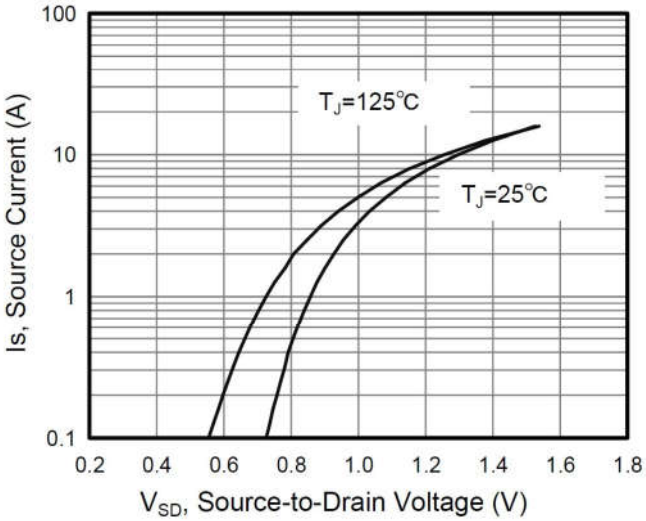
On Resistance vs. Drain Current



Capacitance Characteristics



Gate Charge



Body-Diode Characteristics

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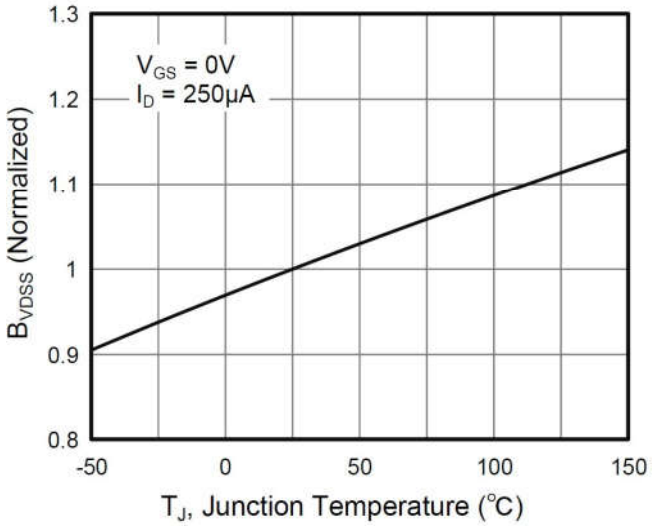
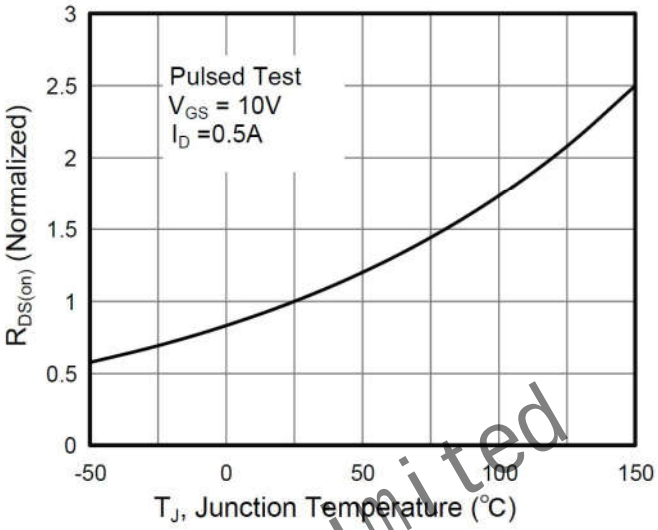


Breakdown Voltage vs Junction Temperature



On-Resistance vs Temperature

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Dimension

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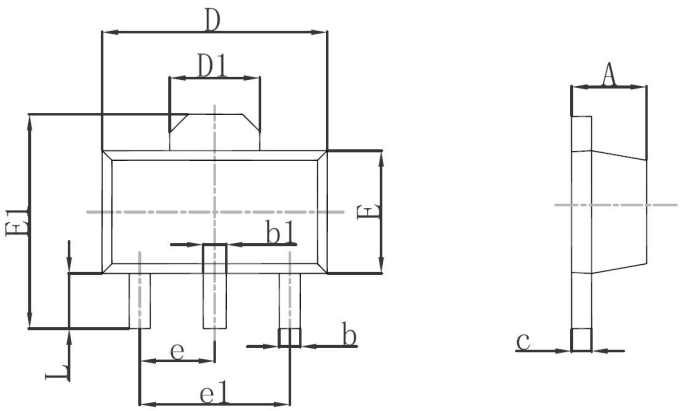

Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118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

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