

General Description

The MY4N60A is silicon N-channel Enhanced VDMOSFETs, is obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The transistor can be used in various power switching circuit for system miniaturization and higher efficiency.

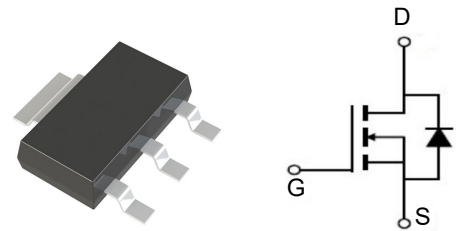


Features

V_{DSS}	600	V
I_D	4	A
$P_D(T_C=25^{\circ}C)$	45	W
$R_{DS(ON)}(at V_{GS}=10V)$	1.95	Ω

Application

- Battery protection
- Load switch
- Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY4N60A	SOT223-3L	MY4N60A	1000

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

Parameter	Symbol	Value	Unit
Drain source voltage	VDS	600	V
Gate source voltage	VGS	± 30	V
Continuous drain current ¹⁾ , $T_C=25^{\circ}C$	I_D	4	A
Pulsed drain current ²⁾ , $T_C=25^{\circ}C$	I_D , pulse	20	A
Power dissipation ³⁾ , $T_C=25^{\circ}C$	P_D	45	W
Single pulsed avalanche energy ⁵⁾	EAS	71	mJ
Operation and storage temperature	Tstg , T_J	-55 to 150	$^{\circ}C$
Thermal resistance, junction-case	$R_{\theta JC}$	4.1	$^{\circ}C/W$
Thermal resistance, junction-ambient ⁴⁾	$R_{\theta JA}$	60	$^{\circ}C/W$

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	600	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 600V, V_{GS} = 0V, T_J = 25^{\circ}\text{C}$	--	--	1	μA
I_{GSS}	Gate-Source Leakage	$V_{GS} = \pm 30V$	--	--	± 100	nA
$V_{GS(th)}$	Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	3.0	--	4.0	V
$R_{DS(on)}$	Drain-Source On-Resistance (Note3)	$V_{GS} = 10V, I_D = 2.5A$	--	1.95	2.5	Ω
C_{iss}	Input Capacitance	$V_{GS} = 0V,$ $V_{DS} = 25V, f = 1.0MHz$	--	462	--	pF
C_{oss}	Output Capacitance		--	54.2	--	
C_{rss}	Reverse Transfer Capacitance		--	8.8	--	
Q_g	Total Gate Charge	$V_{DD} = 400V, I_D = 5A,$ $V_{GS} = 10V$	--	13.5	--	nC
Q_{gs}	Gate-Source Charge		--	2	--	
Q_{gd}	Gate-Drain Charge		--	6	--	
$t_{d(on)}$	Turn-on Delay Time	$V_{DD} = 250V, I_D = 5A, R_G = 25\Omega$	--	10	--	ns
t_r	Turn-on Rise Time		--	25	--	
$t_{d(off)}$	Turn-off Delay Time		--	40	--	
t_f	Turn-off Fall Time		--	52	--	
I_S	Continuous Body Diode Current	$T_C = 25^{\circ}\text{C}$	--	--	5	A
I_{SM}	Pulsed Diode Forward Current		--	--	20	
V_{SD}	Body Diode Voltage	$T_J = 25^{\circ}\text{C}, I_{SD} = 5.0A, V_{GS} = 0V$	--	--	1.4	V
t_{rr}	Reverse Recovery Time	$V_{GS} = 0V, I_S = 5.0A,$ $di_f/dt = 100A/\mu s$	--	220	--	ns
Q_{rr}	Reverse Recovery Charge		--	3	--	μC

Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. $I_{AS} = 3A, V_{DD} = 50V, R_G = 25\Omega$, Starting $T_J = 25^{\circ}\text{C}$
3. Pulse Test: Pulse width $\leq 300\mu s$, Duty Cycle $\leq 1\%$

Typical Characteristics

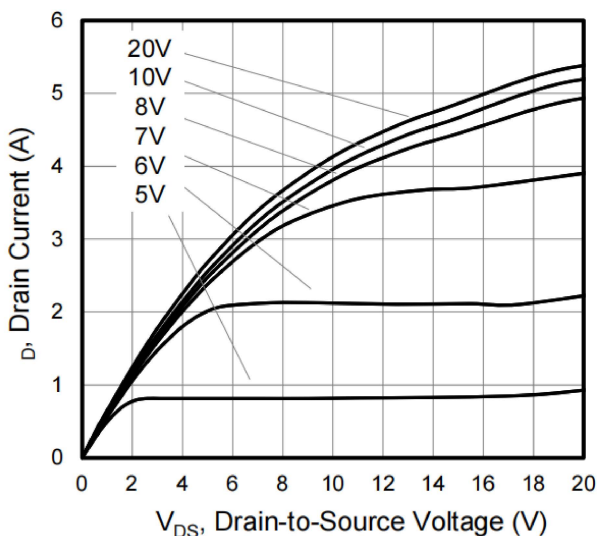


Figure 1. Output Characteristics ($T_J = 25^\circ\text{C}$)

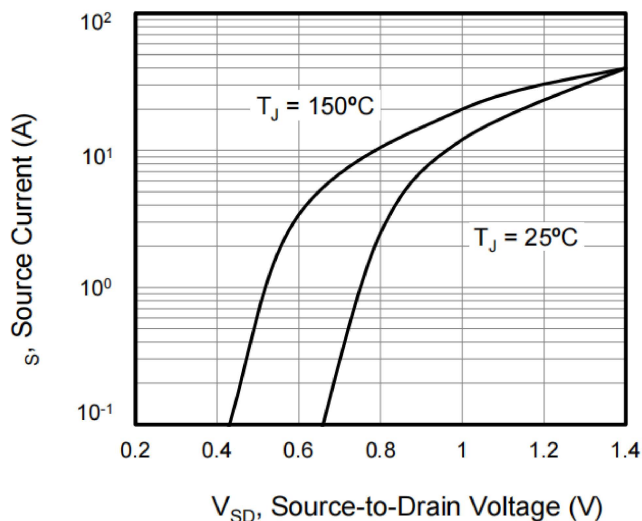


Figure 2. Body Diode Forward Voltage

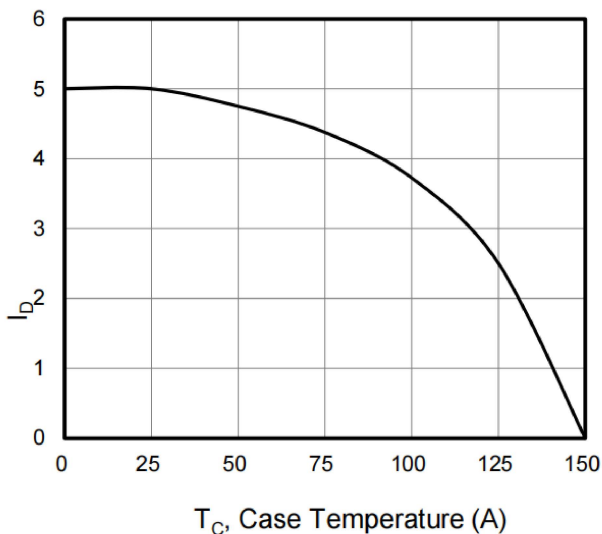


Figure 3. Drain Current vs. Temperature

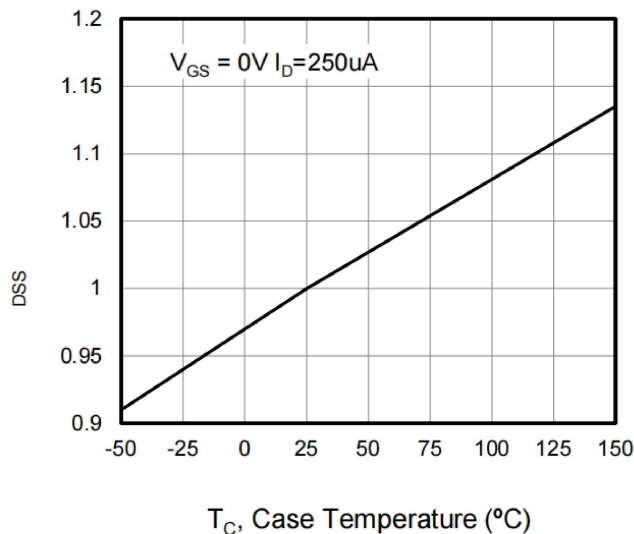


Figure 4. BV_{DSS} Variation vs. Temperature

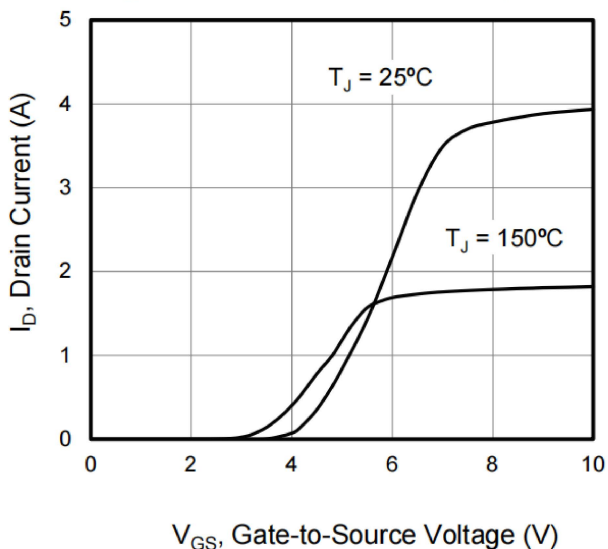


Figure 5. Transfer Characteristics

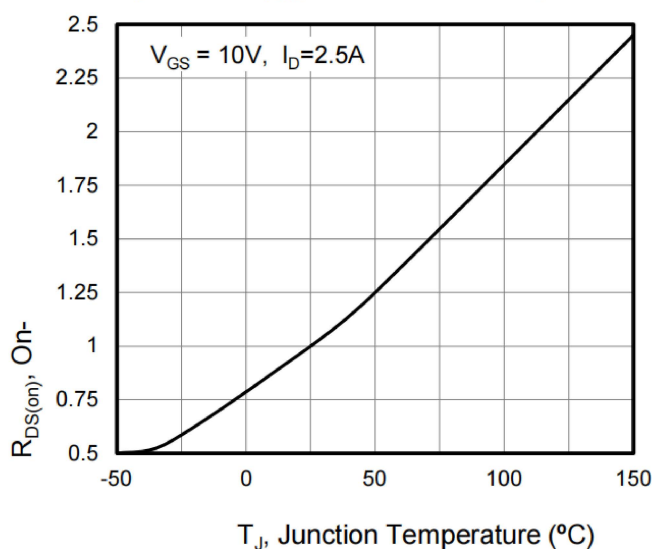


Figure 6. On-Resistance vs. Temperature

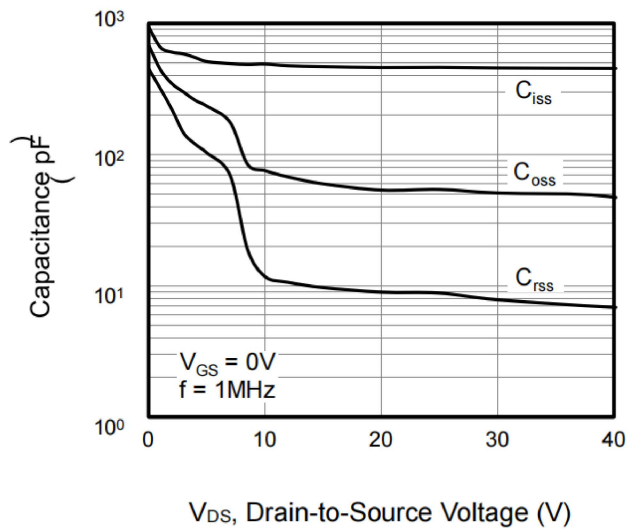


Figure 7. Capacitance

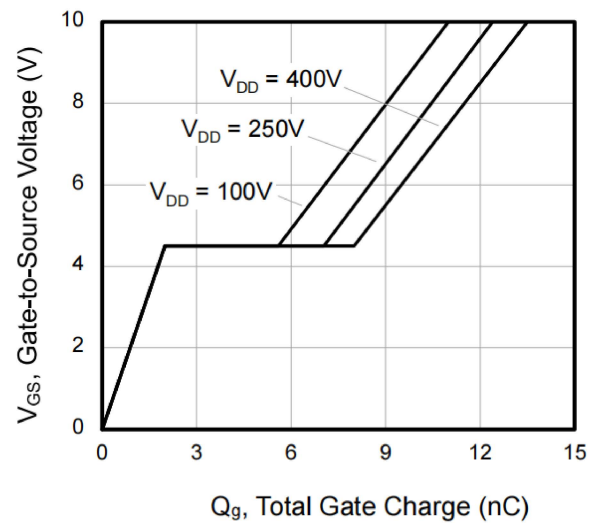


Figure 8. Gate Charge

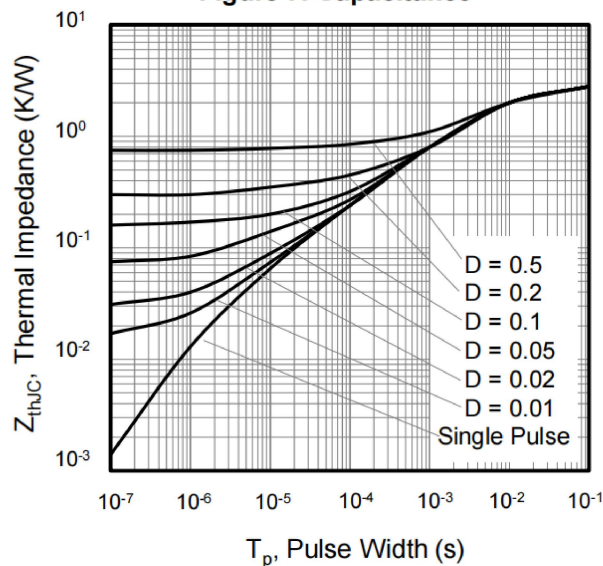
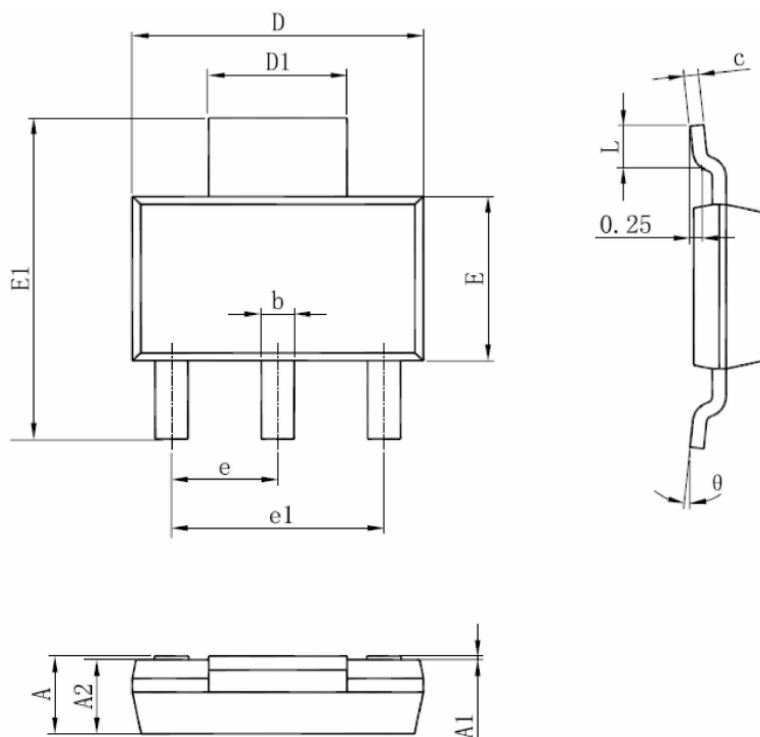


Figure 9. Transient Thermal Impedance

Package Mechanical Data-SOT223-3L Single



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.520	1.800	0.060	0.071
A1	0.000	0.100	0.000	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.820	0.026	0.032
c	0.250	0.350	0.010	0.014
D	6.200	6.400	0.244	0.252
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	0.278
e	2.300(BSC)		0.091(BSC)	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
θ	0°	10°	0°	10°

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.