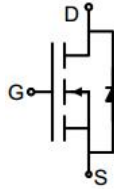
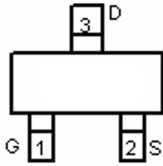
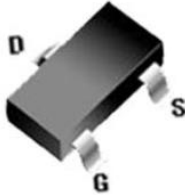


## N-Channel Enhancement Mode Power MOSFET

<p><b>Description</b></p> <p>The 03N06L uses advanced trench technology to provide excellent <math>R_{DS(ON)}</math>, low gate charge. It can be used in a wide variety of applications.</p> <p><b>General Features</b></p> <ul style="list-style-type: none"> <li>• <math>V_{DS}</math> 60V</li> <li>• <math>I_D</math> (at <math>V_{GS} = 10V</math>) 3A</li> <li>• <math>R_{DS(ON)}</math> (at <math>V_{GS} = 10V</math>) &lt; 100m<math>\Omega</math></li> <li>• <math>R_{DS(ON)}</math> (at <math>V_{GS} = 4.5V</math>) &lt; 120m<math>\Omega</math></li> <li>• 100% Avalanche Tested</li> <li>• RoHS Compliant</li> </ul> <p><b>Application</b></p> <ul style="list-style-type: none"> <li>• Power switch</li> <li>• DC/DC converters</li> </ul>		 <p>Schematic diagram</p>  <p>Marking and pin assignment</p>  <p>SOT-23-3L</p>	
<b>Device</b>	<b>Package</b>	<b>Marking</b>	<b>Packaging</b>
03N06L	SOT-23-3	03N06	3000pcs/Reel

Absolute Maximum Ratings $T_C = 25^\circ C$ , unless otherwise noted			
Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Continuous Drain Current	$I_D$	3	A
Pulsed Drain Current (note1)	$I_{DM}$	12	A
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Power Dissipation	$P_D$	1.7	W
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 To 150	$^\circ C$

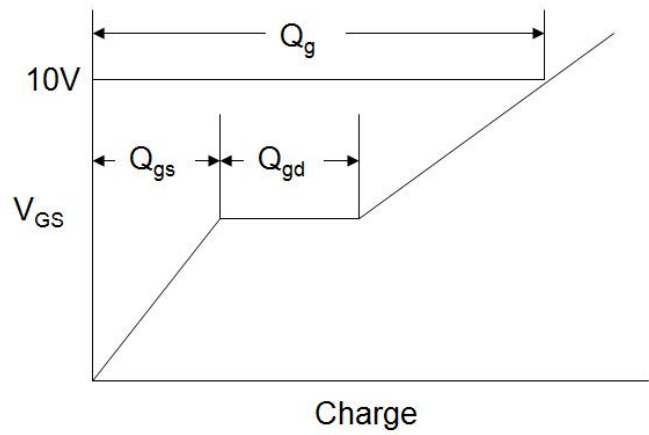
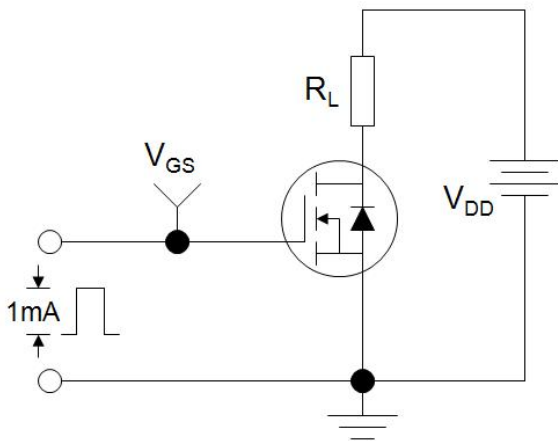
Thermal Resistance			
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	$R_{thJA}$	73.5	$^\circ C/W$

Specifications $T_J = 25^\circ\text{C}$ , unless otherwise noted						
Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
<b>Static Parameters</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	60	--	--	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 60V, V_{GS} = 0V$	--	--	1	$\mu\text{A}$
Gate-Source Leakage	$I_{GSS}$	$V_{GS} = \pm 20V$	--	--	$\pm 100$	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	0.5	1	1.2	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 2A$	--	72	100	m $\Omega$
		$V_{GS} = 4.5V, I_D = 1A$	--	94	120	
<b>Dynamic Parameters</b>						
Input Capacitance	$C_{iss}$	$V_{GS} = 0V,$ $V_{DS} = 30V,$ $f = 1.0\text{MHz}$	--	510	--	pF
Output Capacitance	$C_{oss}$		--	34	--	
Reverse Transfer Capacitance	$C_{rss}$		--	26	--	
Total Gate Charge	$Q_g$	$V_{DS} = 30V,$ $I_D = 3A,$ $V_{GS} = 10V$	--	14.6	--	nC
Gate-Source Charge	$Q_{gs}$		--	1.6	--	
Gate-Drain Charge	$Q_{gd}$		--	3	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 30V,$ $I_D = 1.5A,$ $R_G = 1\Omega$	--	6	--	ns
Turn-on Rise Time	$t_r$		--	15	--	
Turn-off Delay Time	$t_{d(off)}$		--	15	--	
Turn-off Fall Time	$t_f$		--	10	--	
<b>Drain-Source Body Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$	$T_C = 25^\circ\text{C}$	--	--	3	A
Body Diode Voltage	$V_{SD}$	$T_J = 25^\circ\text{C}, I_{SD} = 2A, V_{GS} = 0V$	--	--	1.2	V

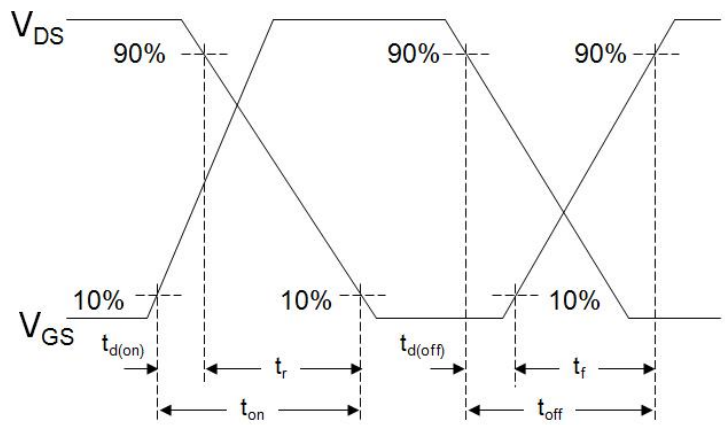
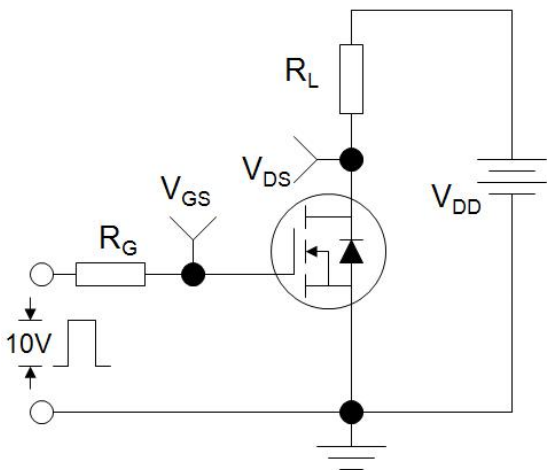
**Notes**

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Identical low side and high side switch with identical  $R_G$

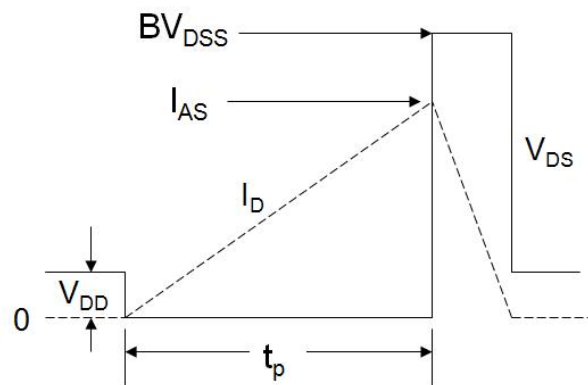
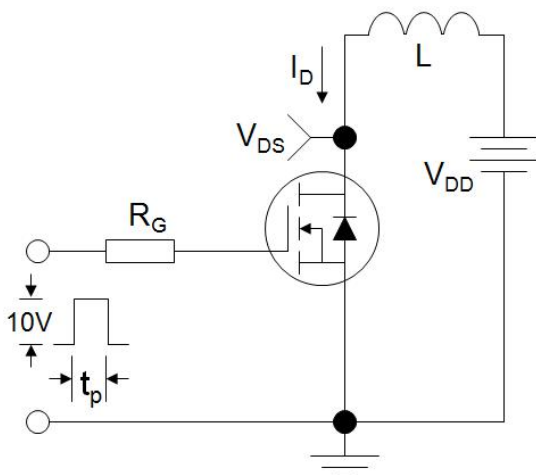
Gate Charge Test Circuit



Switch Time Test Circuit



EAS Test Circuit



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

Figure 1. Output Characteristics

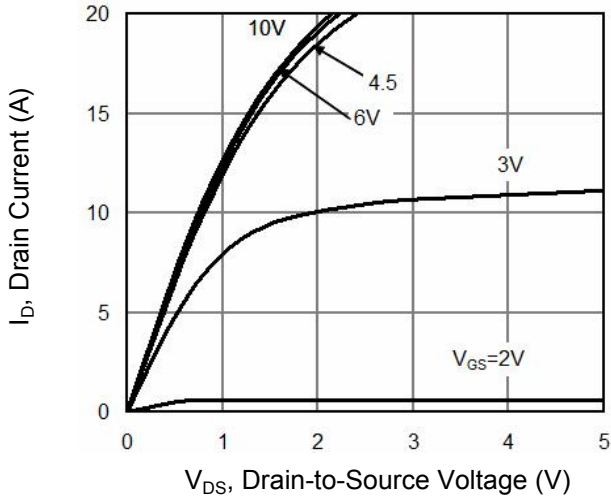


Figure 2. Transfer Characteristics

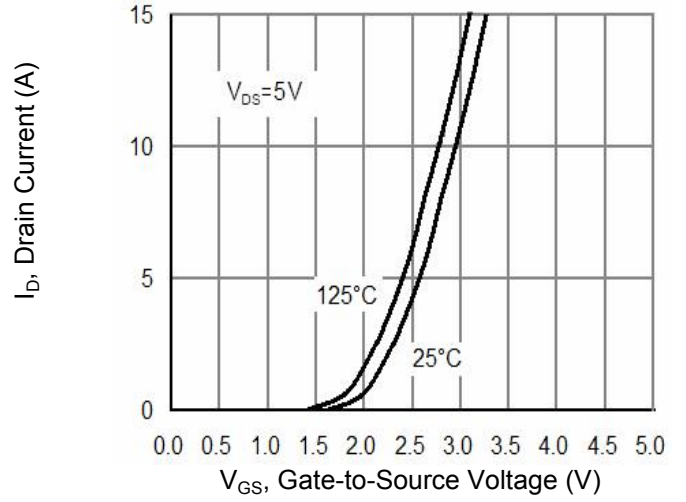


Figure 3. Gate Charge

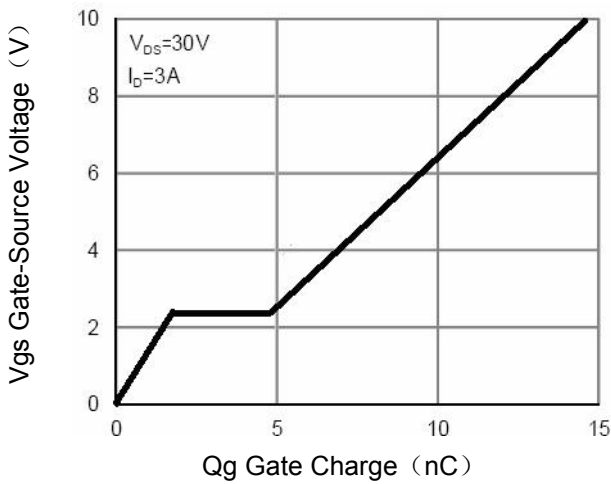


Figure 4. Drain Source On Resistance

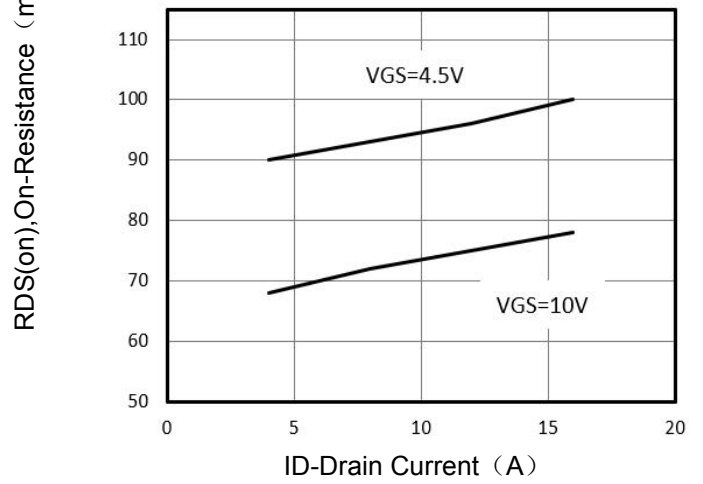


Figure 5. Capacitance

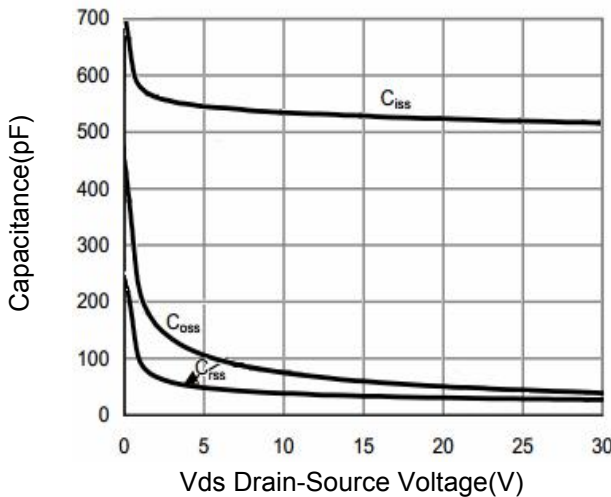
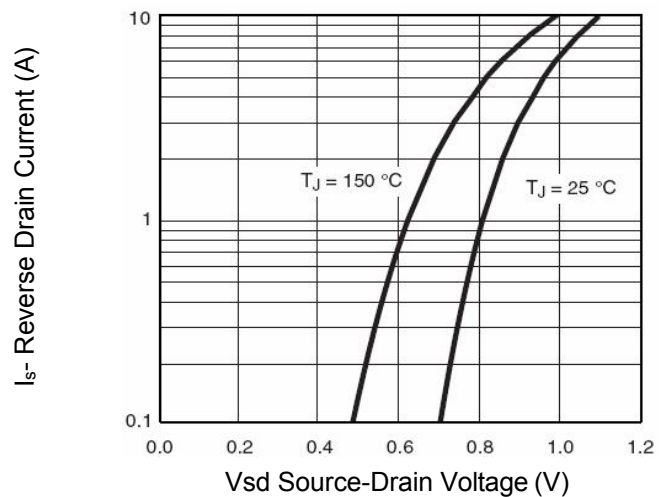


Figure 6. Source-Drain Diode Forward



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

Figure 7. Drain-Source On-Resistance

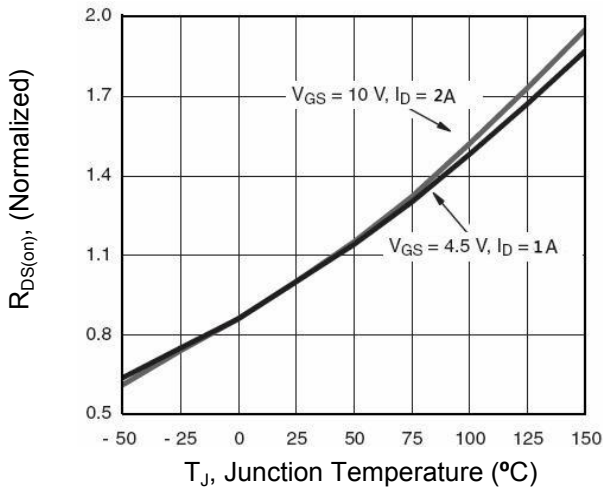


Figure 8. Safe Operation Area

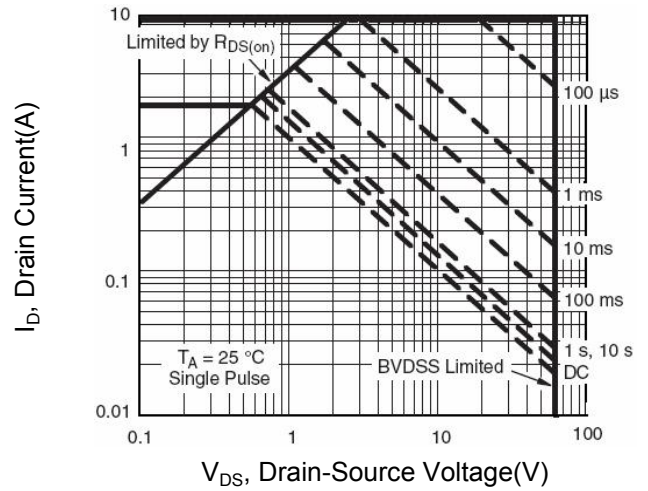
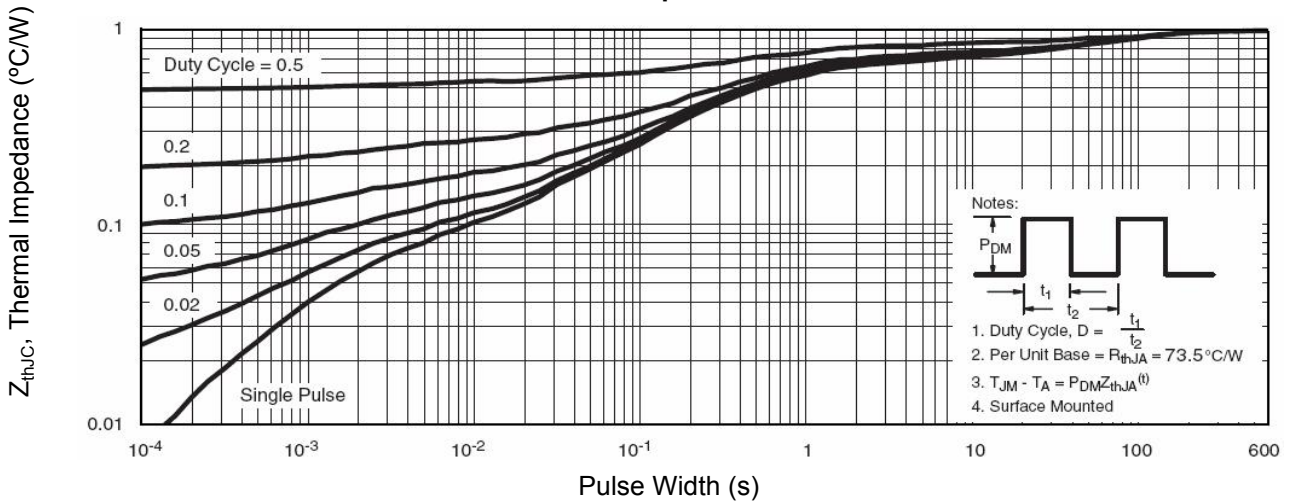
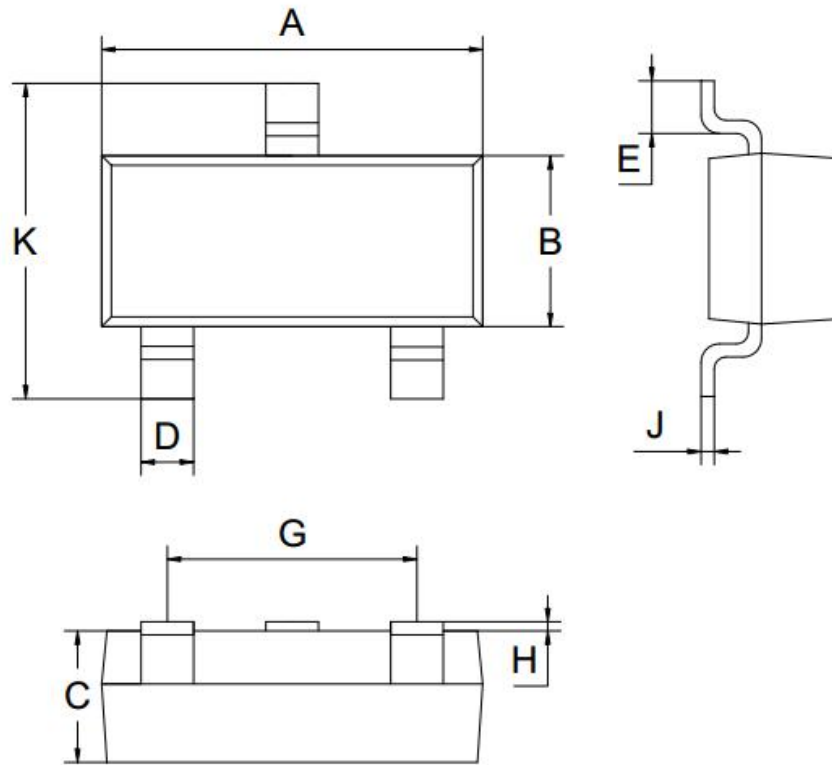


Figure 9. Normalized Maximum Transient Thermal Impedance



SOT-23-3L Package Information



Symbol	Dimensions in Millimeters		
	MIN.	NOM.	MAX.
A	2.80	2.90	3.00
B	1.50	1.60	1.70
C	1.00	1.10	1.20
D	0.30	0.40	0.50
E	0.25	0.40	0.55
G	1.90		
H	0.00	-	0.10
J	0.047	0.127	0.207
K	2.60	2.80	3.00
All Dimensions in mm			

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