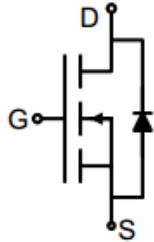
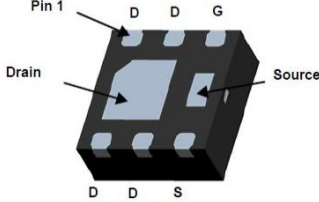


## N-Channel Enhancement Mode Power MOSFET

<p><b>Description</b></p> <p>The G20N03D2 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> 30V</li> <li>● <math>I_D</math> (at <math>V_{GS} = 10V</math>) 9A</li> <li>● <math>R_{DS(ON)}</math> (at <math>V_{GS} = 10V</math>) &lt;15m<math>\Omega</math></li> <li>● <math>R_{DS(ON)}</math> (at <math>V_{GS} = 4.5V</math>) &lt; 21m<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>DFN2x2-6L</p>	
<b>Device</b>	<b>Package</b>	<b>Marking</b>	<b>Packaging</b>
G20N03D2	DFN2X2-6L	G20N03	3000pcs/Reel

### Absolute Maximum Ratings $T_C = 25^\circ C$ , unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Continuous Drain Current	$I_D$	9	A
Pulsed Drain Current (note1)	$I_{DM}$	35	A
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Power Dissipation	$P_D$	2.1	W
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 To 150	$^\circ C$

### Thermal Resistance

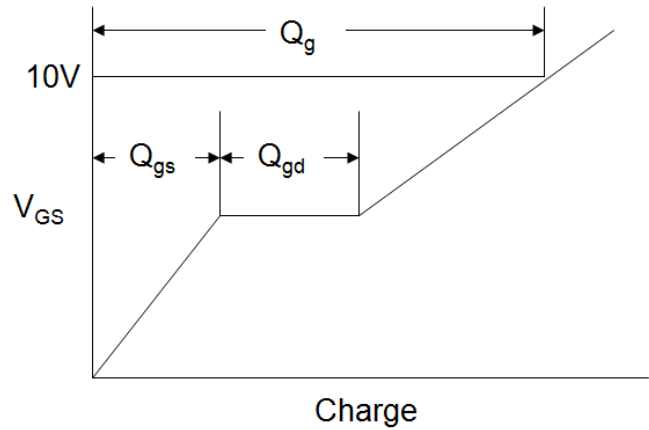
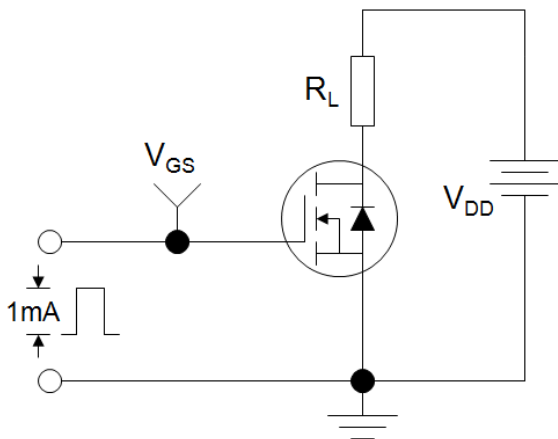
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	$R_{thJA}$	59	$^\circ C/W$

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	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	30	--	--	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 30V, V_{GS} = 0V$	--	--	1	$\mu\text{A}$
Gate-Source Leakage	$I_{GSS}$	$V_{GS} = \pm 20V$	--	--	$\pm 100$	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1.3	1.5	2	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 5A$	--	12.5	15	m $\Omega$
		$V_{GS} = 4.5V, I_D = 5A$	--	17.5	21	
Forward Transconductance	$g_{FS}$	$V_{DS} = 5V, I_D = 5A$	--	9.5	--	S
<b>Dynamic Parameters</b>						
Input Capacitance	$C_{iss}$	$V_{GS} = 0V,$ $V_{DS} = 15V,$ $f = 1.0\text{MHz}$	--	860	--	pF
Output Capacitance	$C_{oss}$		--	80	--	
Reverse Transfer Capacitance	$C_{rss}$		--	76	--	
Total Gate Charge	$Q_g$	$V_{DD} = 15V,$ $I_D = 4A,$ $V_{GS} = 10V$	--	20	--	nC
Gate-Source Charge	$Q_{gs}$		--	2.5	--	
Gate-Drain Charge	$Q_{gd}$		--	5	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 15V,$ $I_D = 4A,$ $R_G = 1\Omega$	--	4	--	ns
Turn-on Rise Time	$t_r$		--	9	--	
Turn-off Delay Time	$t_{d(off)}$		--	17	--	
Turn-off Fall Time	$t_f$		--	6	--	
<b>Drain-Source Body Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$	$T_C = 25^\circ\text{C}$	--	--	9	A
Body Diode Voltage	$V_{SD}$	$T_J = 25^\circ\text{C}, I_{SD} = 5A, V_{GS} = 0V$	--	--	1.2	V
Reverse Recovery Charge	$Q_{rr}$	$I_F = 5A, di/dt = 100A/\mu\text{s}$	--	9	--	nC
Reverse Recovery Time	$T_{rr}$		--	15	--	ns

**Notes**

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

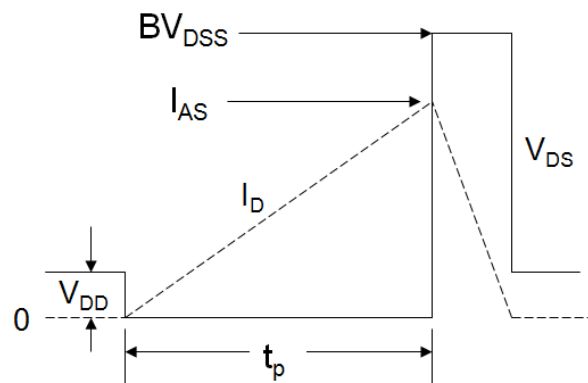
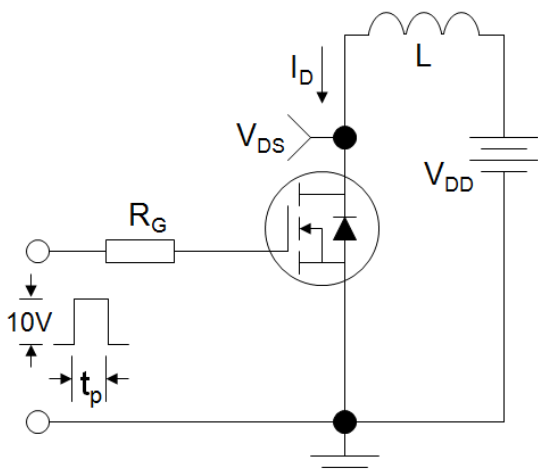
Gate Charge Test Circuit



Switch Time Test Circuit



EAS Test Circuit



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

Figure 1. Output Characteristics

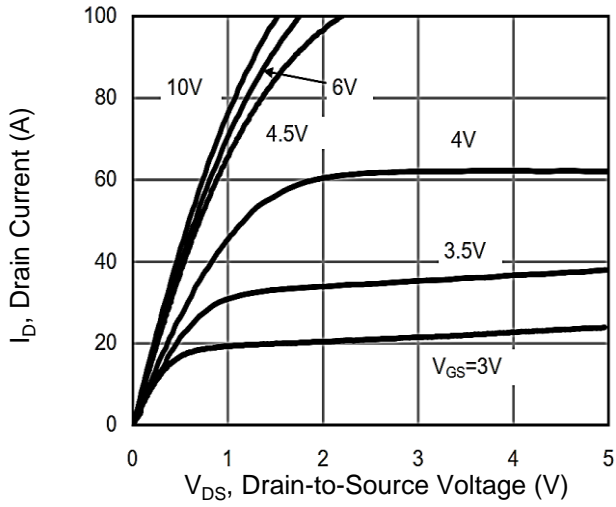


Figure 2. Transfer Characteristics

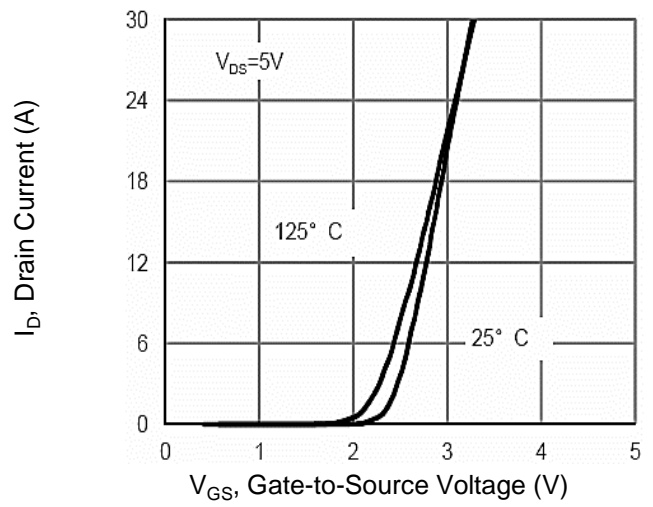


Figure 3. Gate Charge

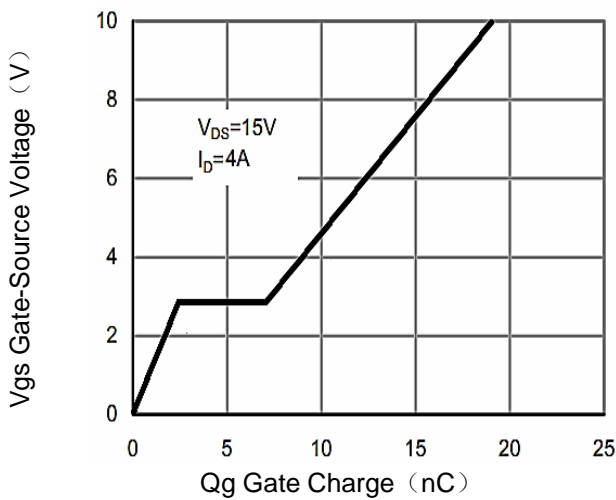


Figure 4. Drain Source On Resistance

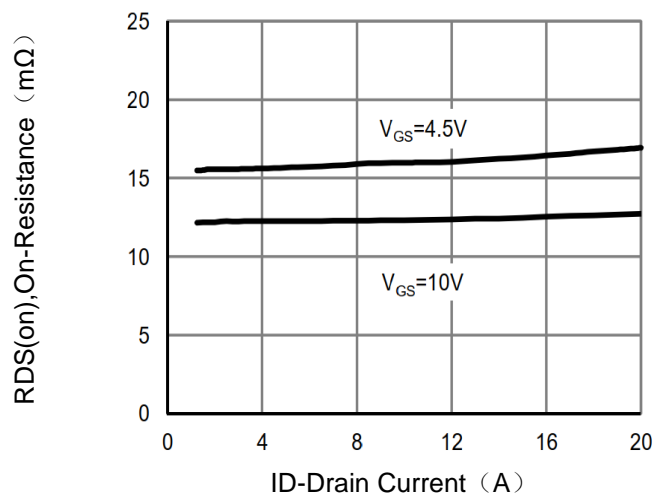


Figure 5. Capacitance

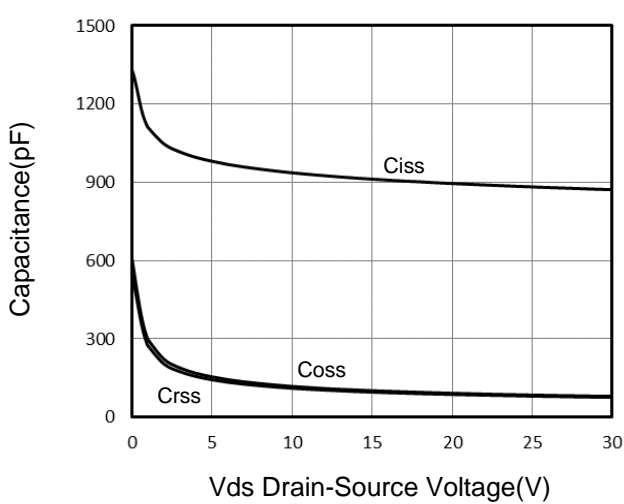
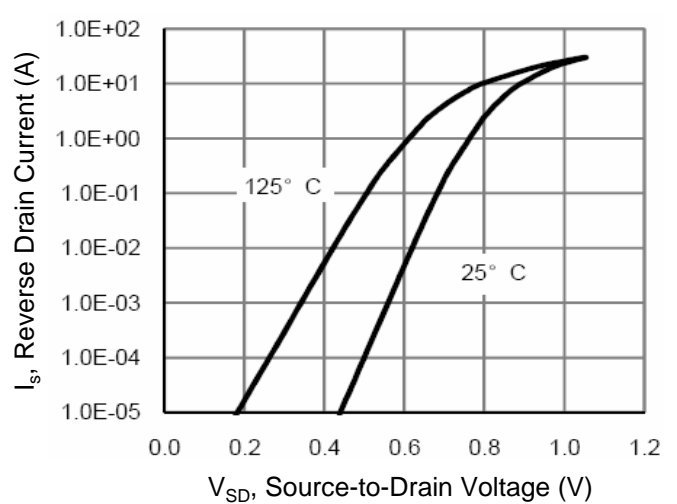


Figure 6. Source-Drain Diode Forward



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

Figure 7. Drain-Source On-Resistance

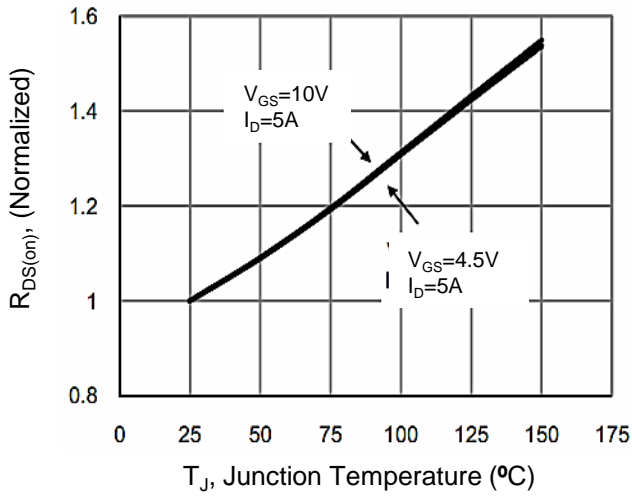


Figure 8. Safe Operation Area

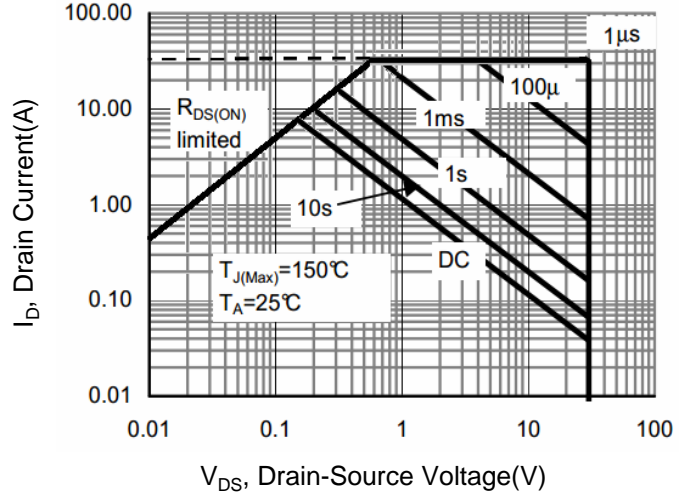
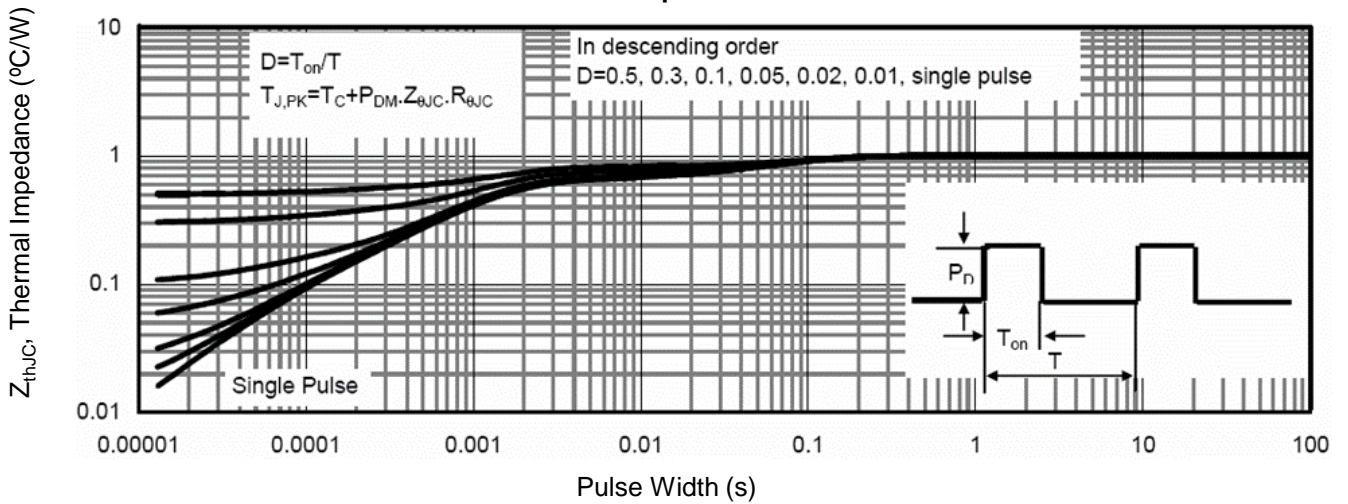
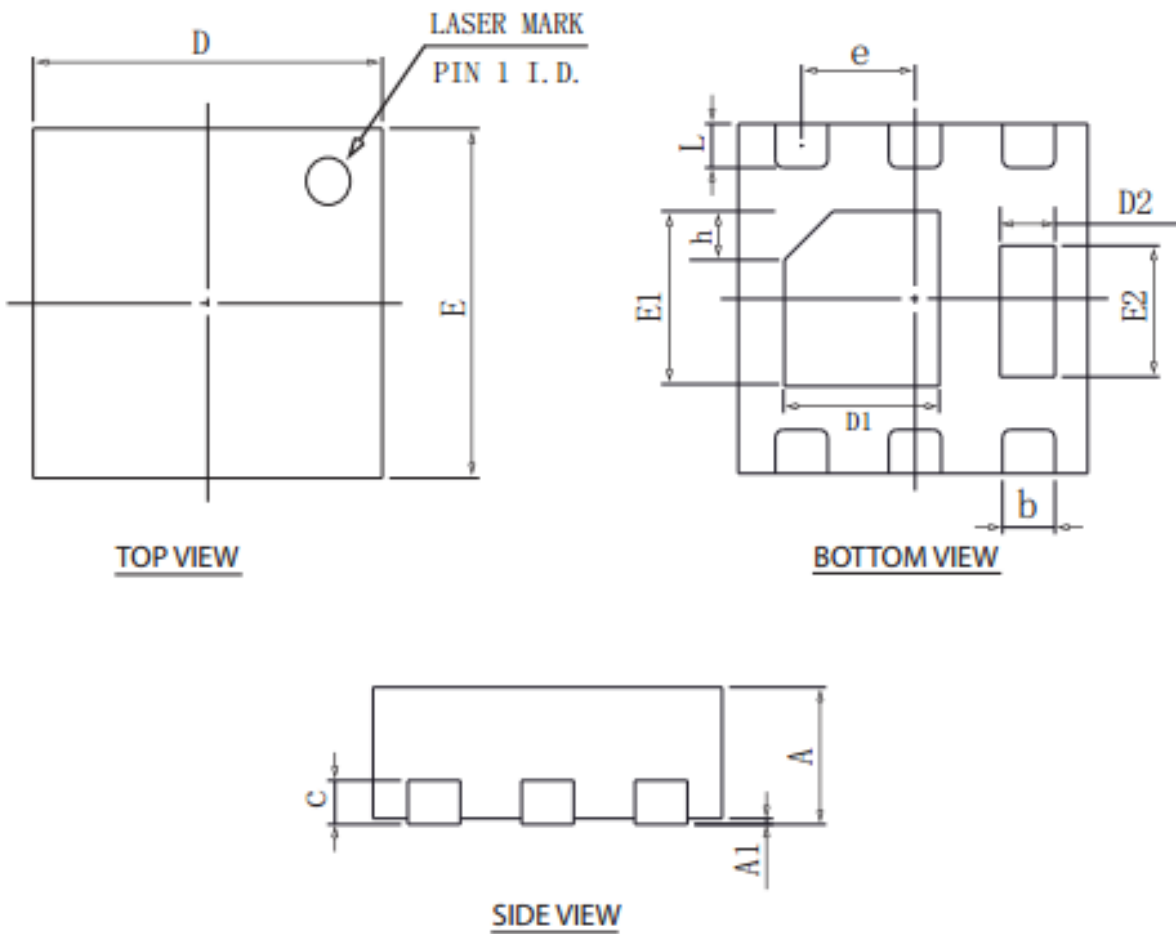


Figure 9. Normalized Maximum Transient Thermal Impedance



DFN2×2-6L Package Information



COMMON DIMENSIONS

SYMBOL	mm		
	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	NA	0.02	0.05
b	0.20	0.27	0.34
c	0.18	0.20	0.25
D	1.95	2.00	2.07
E	1.95	2.00	2.07
D1	0.80	0.90	1.00
E1	0.90	1.00	1.10
D2	0.20	0.30	0.40
E2	0.65	0.75	0.85
L	0.20	0.25	0.35
h	0.20	0.25	0.30
e	0.65BSC		