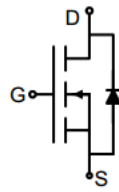



N-Channel Enhancement Mode Power MOSFET

<p>Description</p> <p>The G30N04D3 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.</p> <p>General Features</p> <ul style="list-style-type: none"> ● V_{DS} 40V ● I_D (at $V_{GS} = 10V$) 30A ● $R_{DS(ON)}$ (at $V_{GS} = 10V$) < 9.5 mΩ ● $R_{DS(ON)}$ (at $V_{GS} = 4.5V$) < 16 mΩ ● 100% Avalanche Tested ● RoHS Compliant <p>Application</p> <ul style="list-style-type: none"> ● Power switch ● DC/DC converters 		 <p>Schematic Diagram</p>  <p>DFN3X3-8L</p>	
Device	Package	Marking	Packaging
G30N04D3	DFN3X3-8L	G30N04	3000pcs/Reel

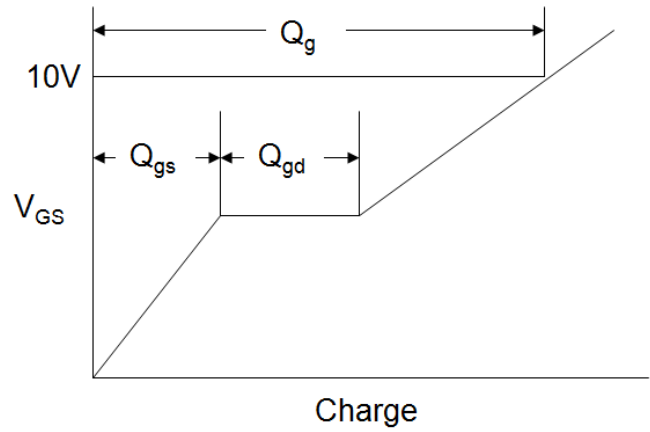
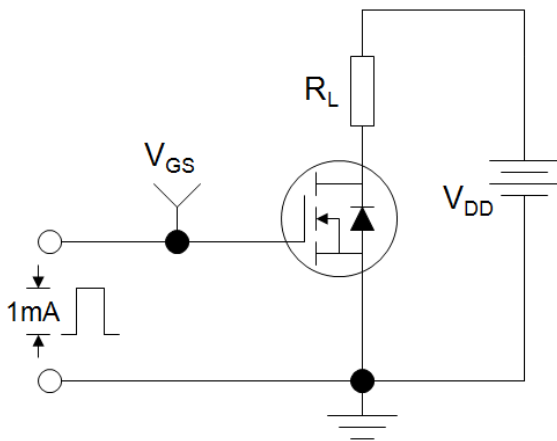
Absolute Maximum Ratings $T_C = 25^{\circ}C$, unless otherwise noted			
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Continuous Drain Current	I_D	30	A
Pulsed Drain Current (note1)	I_{DM}	120	A
Gate-Source Voltage	V_{GS}	± 20	V
Power Dissipation	P_D	19.8	W
Single pulse avalanche energy (note3)	E_{AS}	92	mJ
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-Case	R_{thJC}	6.3	$^{\circ}C/W$

Specifications $T_J = 25^\circ\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static Parameters						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	40	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 40V, V_{GS} = 0V$	--	--	1	μA
Gate-Source Leakage	I_{GSS}	$V_{GS} = \pm 20V$	--	--	± 100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.32	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$	--	7.8	9.5	m Ω
		$V_{GS} = 4.5V, I_D = 20A$	--	11.3	16	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=6.5A$	--	75	--	S
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{GS} = 0V,$ $V_{DS} = 20V,$ $f = 1.0MHz$	--	1780	--	pF
Output Capacitance	C_{oss}		--	209	--	
Reverse Transfer Capacitance	C_{rss}		--	160	--	
Total Gate Charge	Q_g	$V_{DS} = 20V,$ $I_D = 6.5A,$ $V_{GS} = 10V$	--	30	--	nC
Gate-Source Charge	Q_{gs}		--	4.2	--	
Gate-Drain Charge	Q_{gd}		--	9.5	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 20V,$ $R_L = 2\Omega,$ $R_G = 3\Omega$	--	6.4	--	ns
Turn-on Rise Time	t_r		--	17.2	--	
Turn-off Delay Time	$t_{d(off)}$		--	29.6	--	
Turn-off Fall Time	t_f		--	16.8	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	$T_C = 25^\circ\text{C}$	--	--	13	A
Body Diode Voltage	V_{SD}	$T_J = 25^\circ\text{C}, I_{SD} = 10A, V_{GS} = 0V$	--	--	1.0	V

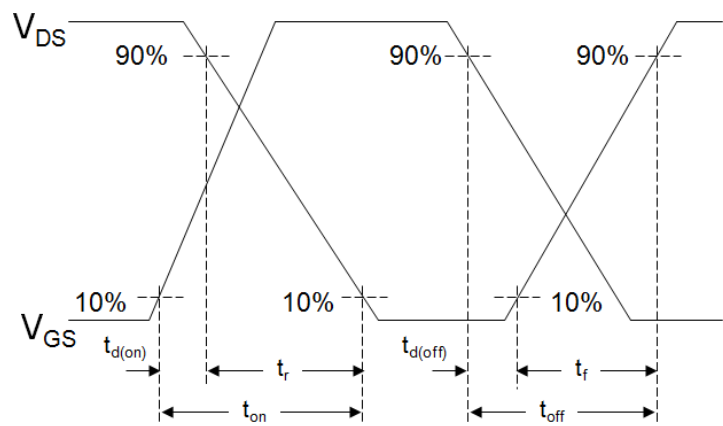
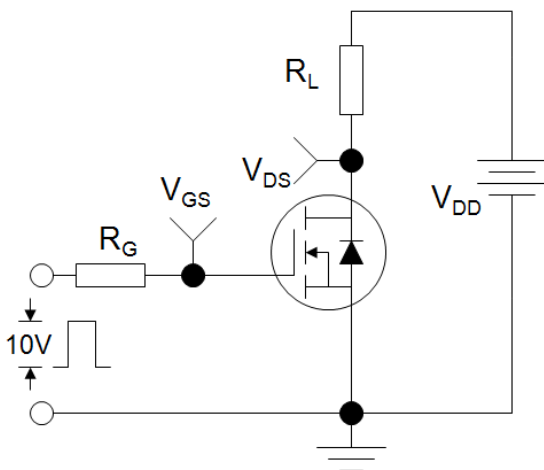
Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

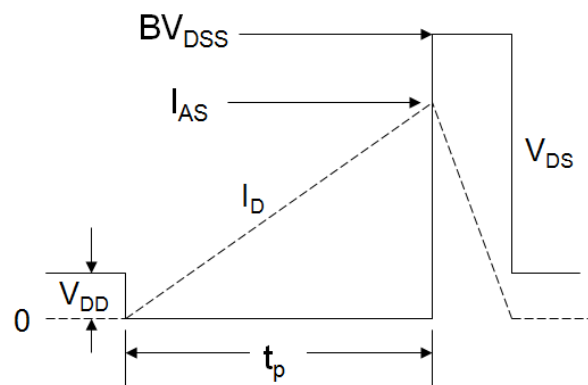
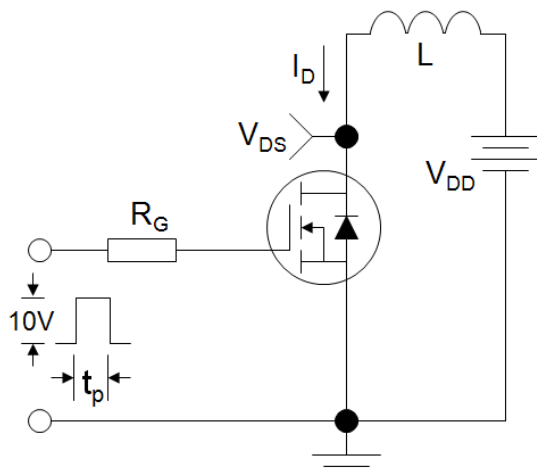
Gate Charge Test Circuit



EAS Test Circuit



Switch Time Test Circuit



Typical Electrical and Thermal Characteristics (Curves)

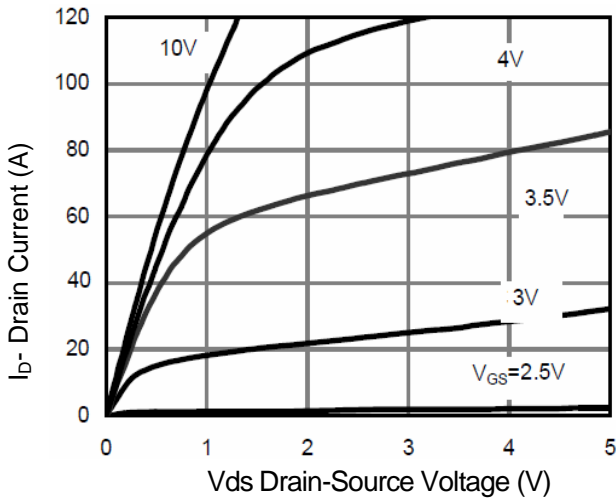


Figure 1 Output Characteristics

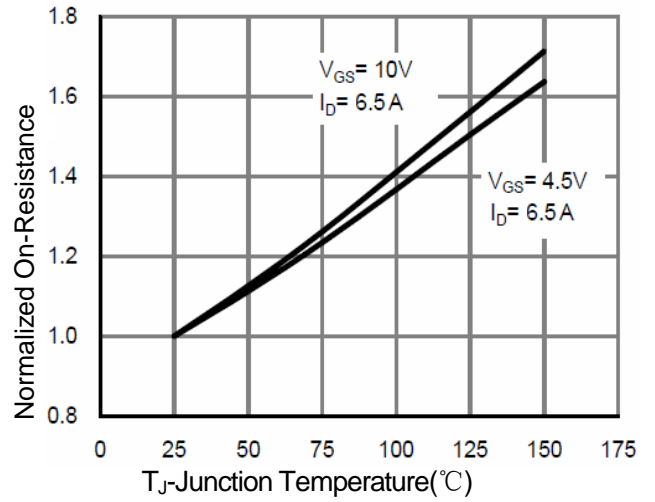


Figure 4 R_{dson} -Junction Temperature

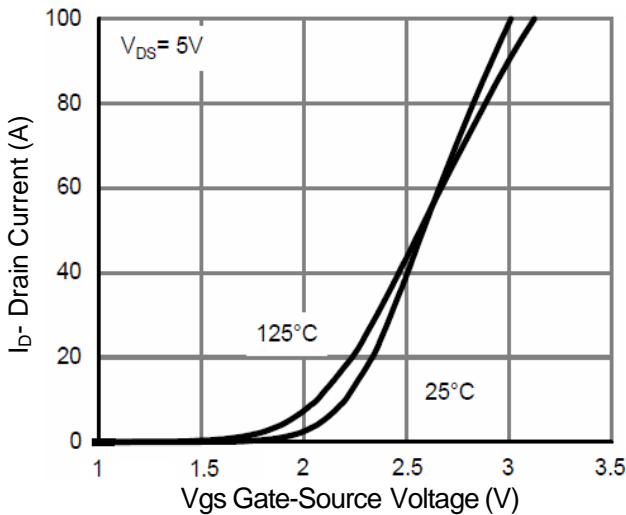


Figure 2 Transfer Characteristics

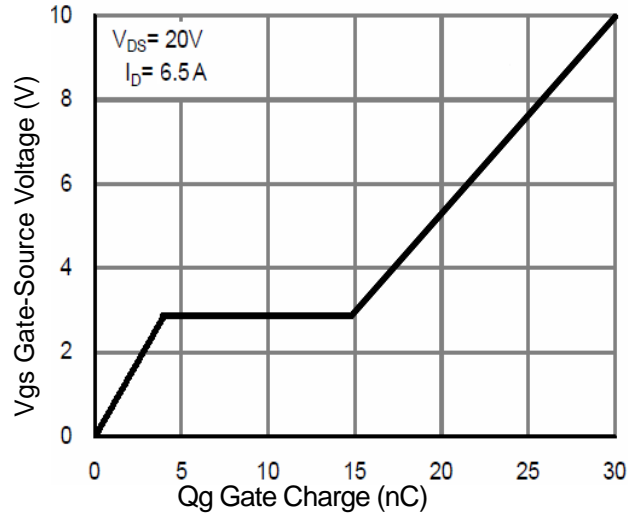


Figure 5 Gate Charge

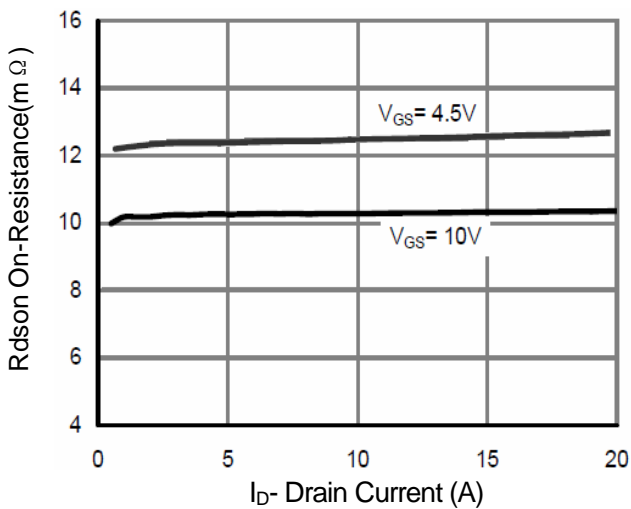


Figure 3 R_{dson} - Drain Current

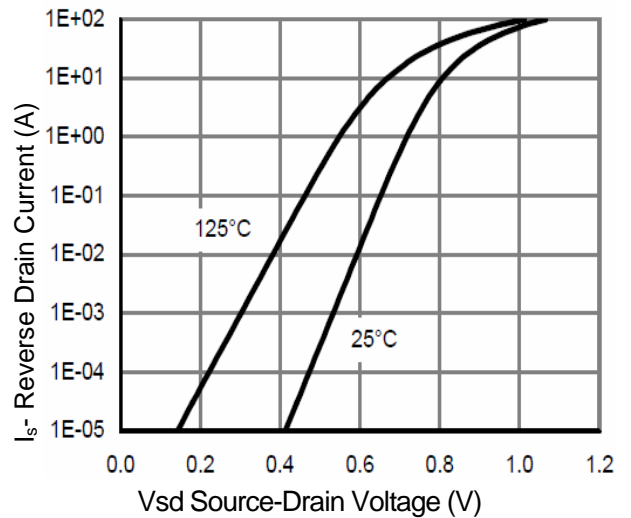


Figure 6 Source- Drain Diode Forward

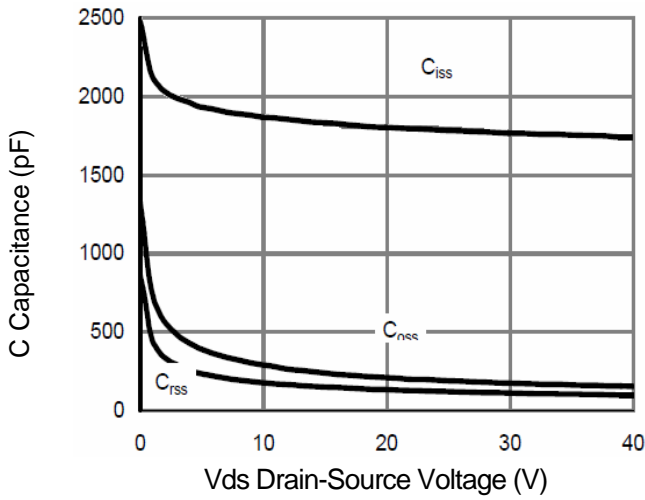


Figure 7 Capacitance vs Vds

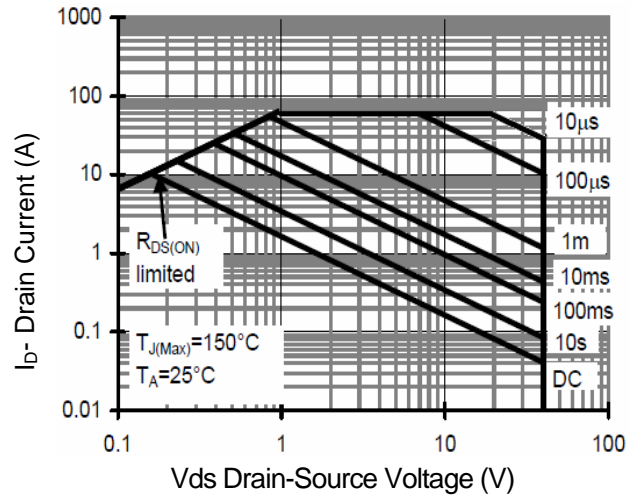


Figure 8 Safe Operation Area

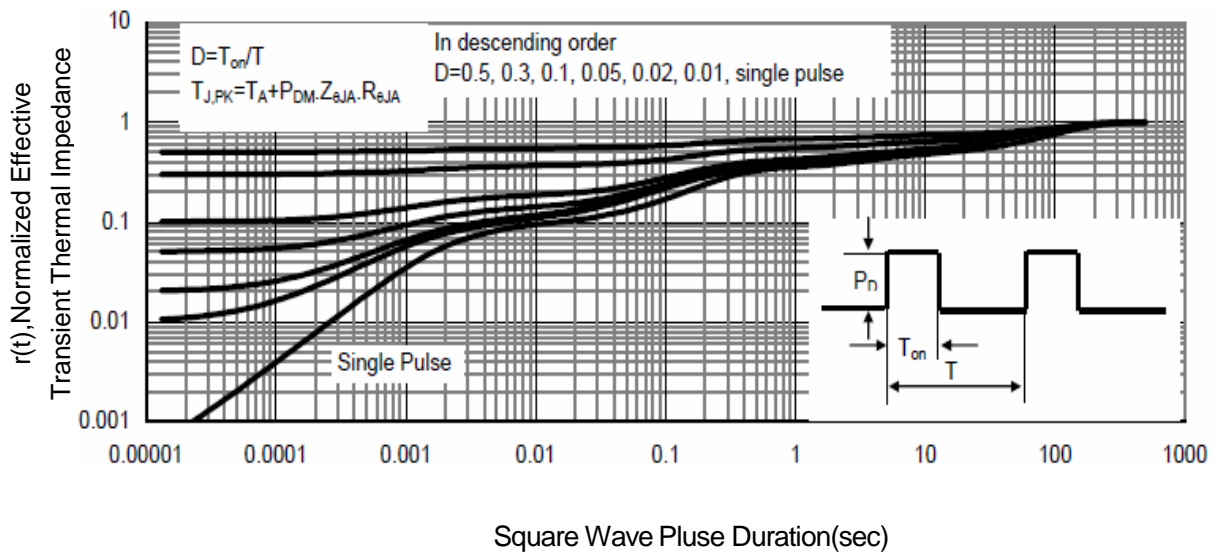
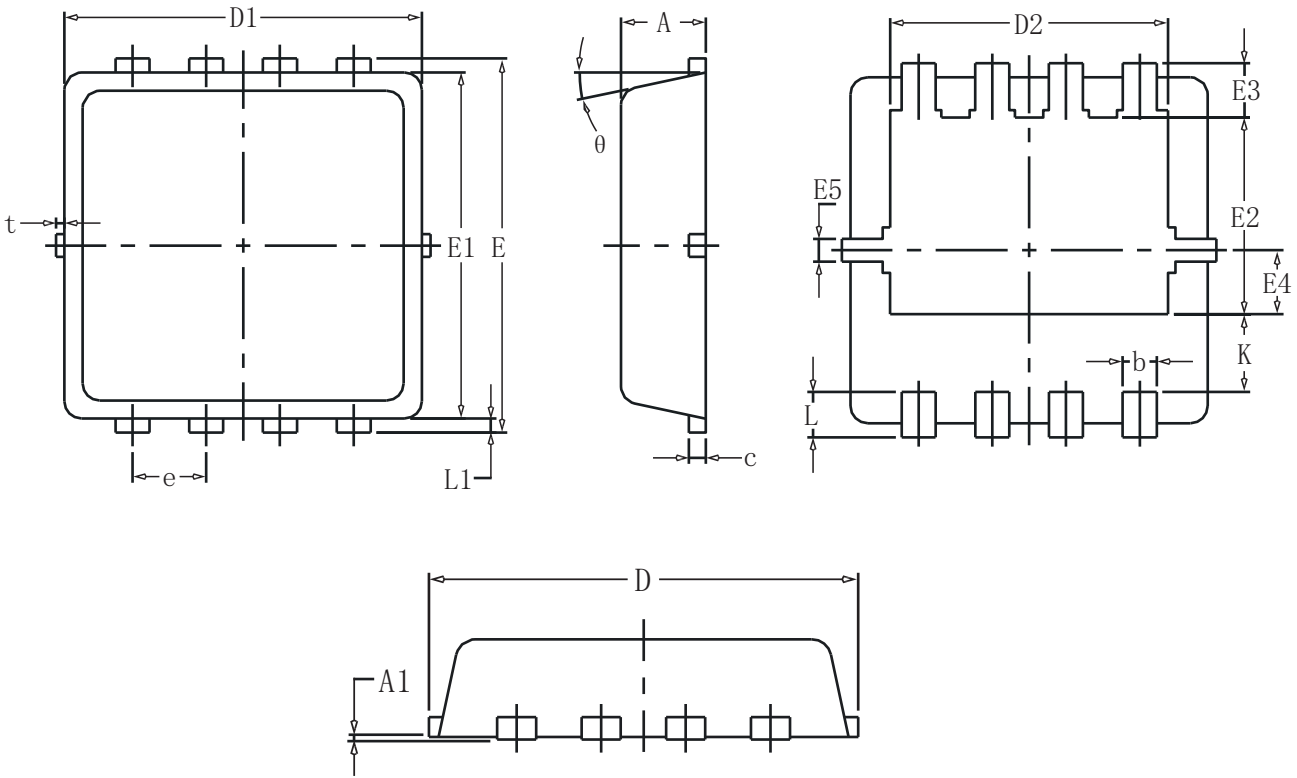


Figure 9 Normalized Maximum Transient Thermal Impedance

DFN3X3-8L Package information



SYMBOL	COMMON		
	MM		
	MIN	NOM	MAX
A	0.70	0.75	0.85
A1	-	-	0.05
b	0.20	0.30	0.40
c	0.10	0.152	0.25
D	3.15	3.30	3.45
D1	3.00	3.15	3.25
D2	2.29	2.45	2.65
E	3.15	3.30	3.45
E1	2.90	3.05	3.20
E2	1.54	1.74	1.94
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.59	0.69	0.89
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
t	0	0.075	0.13
θ	10°	12°	14°