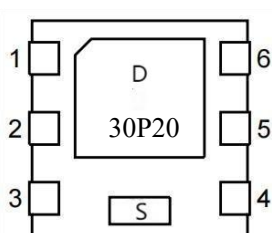


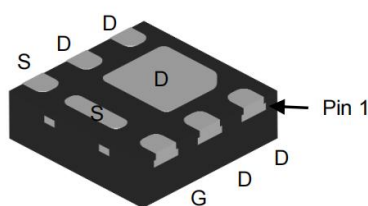
Features	<i>Bvdss</i>	<i>Rdson</i>	<i>ID</i>
	-30V	13mΩ	-20A
➤ Super Low Gate Charge ➤ Green Device Available ➤ Excellent Cdv/dt effect decline ➤ Advanced high cell density Trench technology	Application ➤ PWM applications ➤ Load Switch ➤ Power management		

RoHS

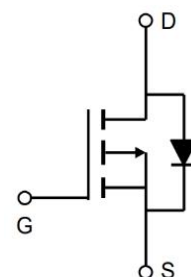
Package



Marking and pin assignment



DFN2x2-6L top view



Schematic diagram

Package Marking and Ordering Information

Device Marking	Device	Device Package	Quantity
30P20	30P20M	DFN2X2-6L	3000

Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V _{DS}	-30	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current, V _{GS} @ -10V ¹	ID@T _C =25°C	-20	A
	ID@T _C =100°C	-16	A
Pulsed Drain Current ²	I _{DM}	-100	A
Single Pulse Avalanche Energy ³	E _{AS}	45	mJ
Avalanche Current	I _{AS}	-20	A
Total Power Dissipation ⁴	P _D @T _C =25°C	9	W
	P _D @T _A =25°C	4.2	W
Storage Temperature Range	T _{STG}	-55 ~ 150	°C
Operating Junction Temperature Range	T _J	-55 ~ 150	°C



Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	68	$^{\circ}\text{C/W}$
Thermal Resistance Junction-Case	$R_{\theta JC}$	-	$^{\circ}\text{C/W}$

Ordering Information

Ordering Number	Package	Pin Assignment			Packing
Halogen Free		G	D	S	
HL30P20M	DFN2X2-6L	3	1,2,5,6	4	Tape Reel

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V$	-	-	-1	μA
Gate-body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1	-1.6	-2.5	V
Static Drain-Source On-Resistance ³	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-10A$	-	13	16	m Ω
		$V_{GS}=-4.5V, I_D=-5A$	-	18	27	
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V, f=1.0MHz$	-	1330	-	pF
Output Capacitance	C_{oss}		-	183	-	
Reverse Transfer Capacitance	C_{rss}		-	156	-	
Total Gate Charge	Q_g	$V_{DS}=-15V, I_D=-5A,$ $V_{GS}=-10V$	-	22	-	nC
Gate Source Charge	Q_{gs}		-	1	-	
Gate Drain("Miller")Charge	Q_{gd}		-	1.8	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-15V, I_D=-10A,$ $R_G=2.5\Omega, V_{GS}=-10V$	-	9	-	ns
Turn-On Rise Time	t_r		-	13	-	
Turn-Off Delay Time	$t_{d(off)}$		-	48	-	
Turn-Off Fall Time	t_f		-	20	-	
Drain to Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-15A$	-	-0.8	-1.2	V
Maximum Continuous Drain to Source Diode Forward Current	I_S	-	-	-	-20	A
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}	-	-	-	-80	A
Reverse Recovery Time	t_{rr}	$V_{DD}=-24V, I_F=-2.8A,$ $di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	-	64	-	ns
Reverse Recovery Charge	Q_{rr}		-	25	-	nC

Note :

- 1.Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
- 2.EAS condition: $T_J=25^{\circ}\text{C}$, $V_{GS}=10\text{V}$, $R_G=25\Omega$, $L=0.5\text{mH}$, $I_{AS}=-12.7\text{A}$
- 3.Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$

Typical Performance Characteristics

Figure1: Output Characteristics

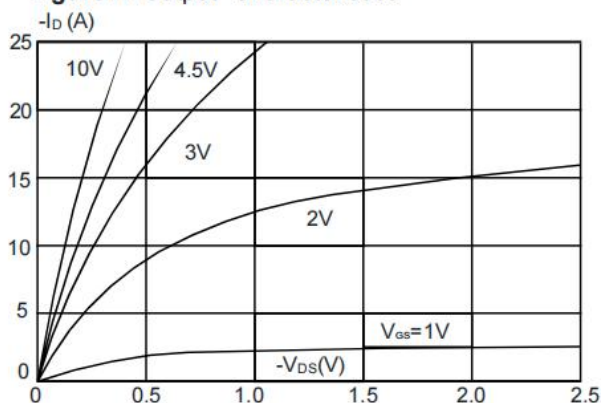


Figure 2: Typical Transfer Characteristics

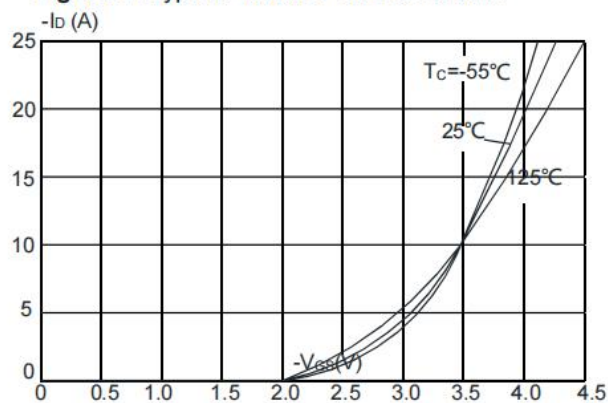


Figure 3: On-resistance vs. Drain Current

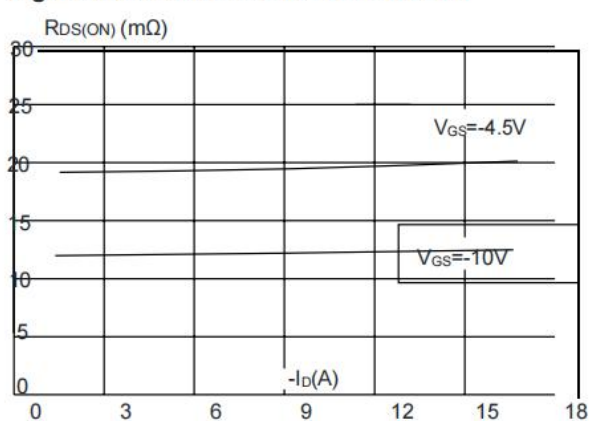


Figure 4 : Body Diode Characteristics

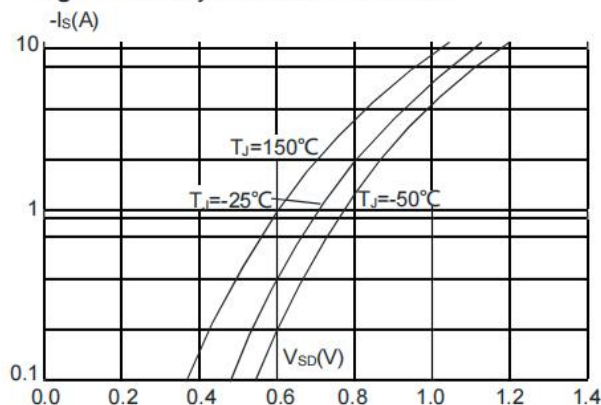


Figure 5: Gate Charge Characteristics

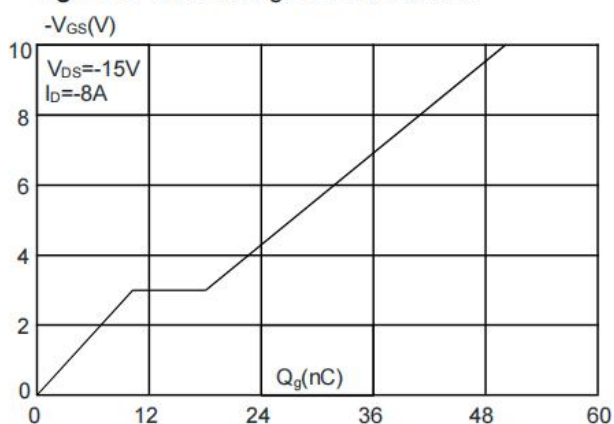


Figure 6: Capacitance Characteristics

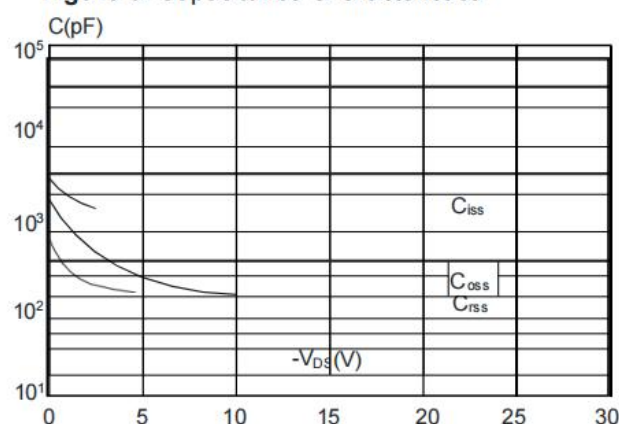


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

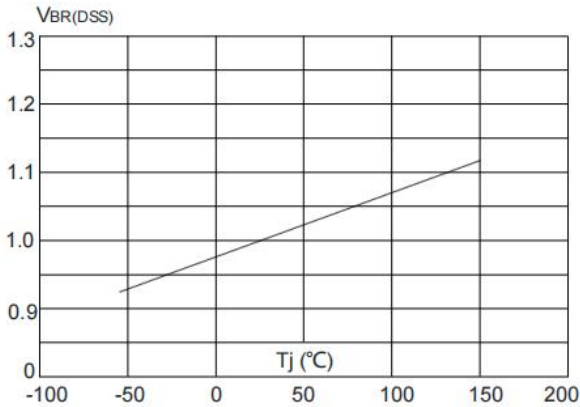


Figure 8: Normalized on Resistance vs. Junction Temperature

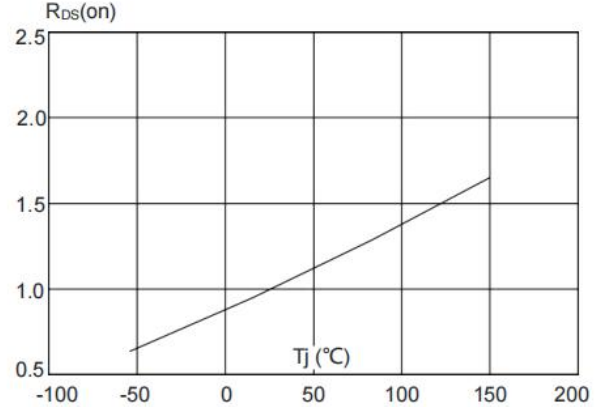


Figure 9: Maximum Safe Operating Area

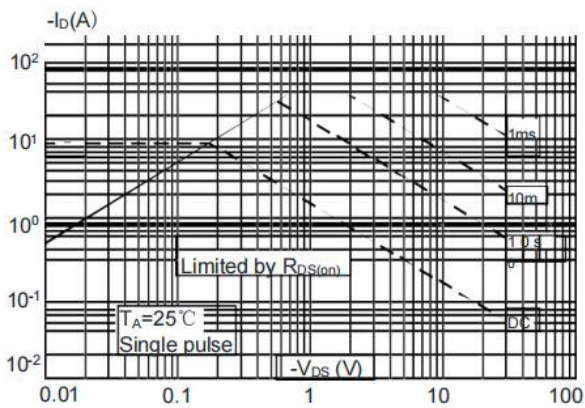


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

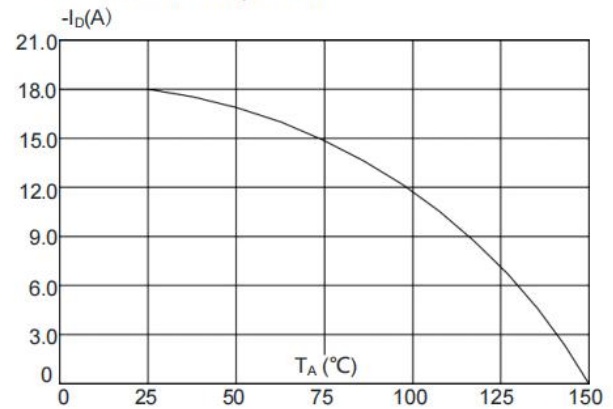
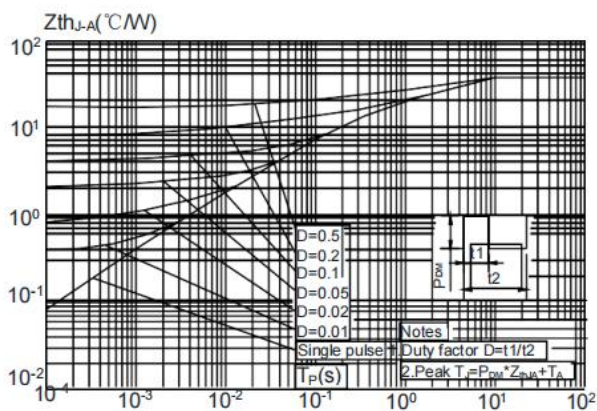
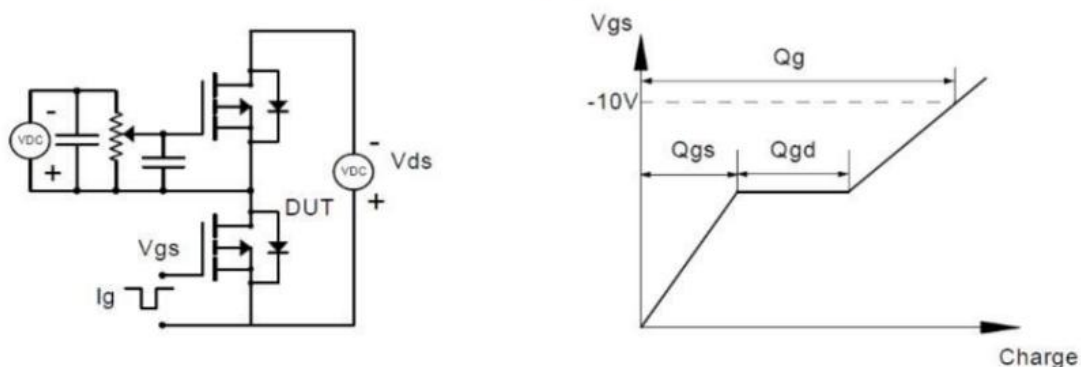


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

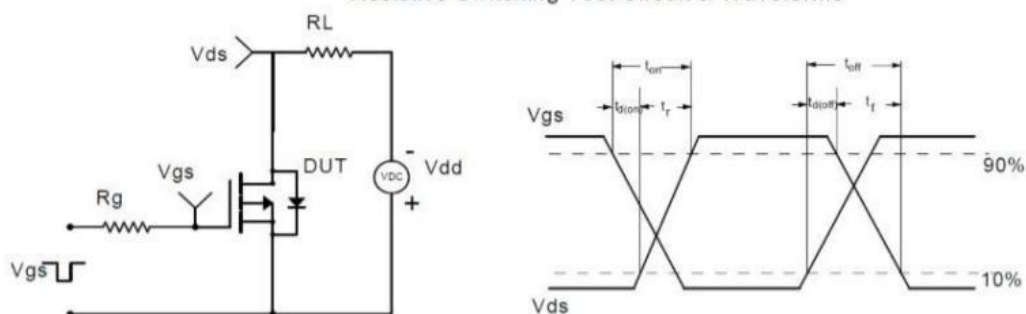


Test Circuit

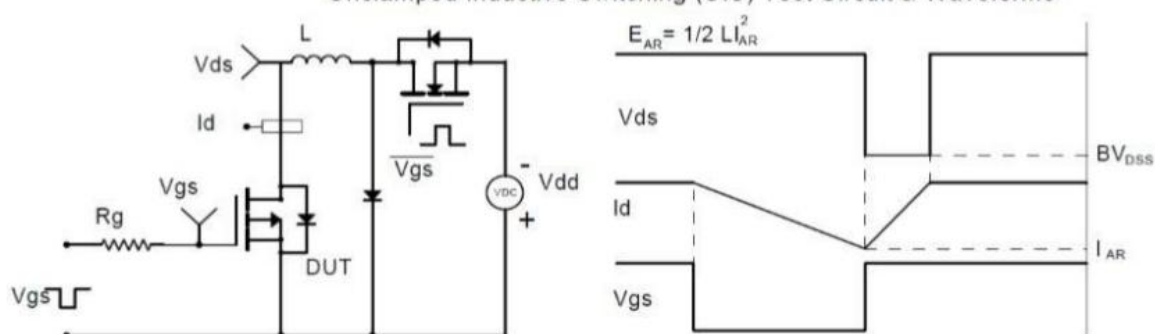
Gate Charge Test Circuit & Waveform



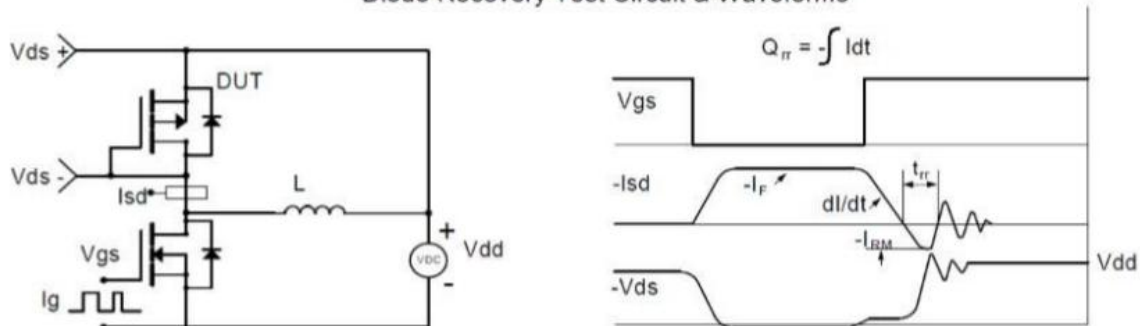
Resistive Switching Test Circuit & Waveforms



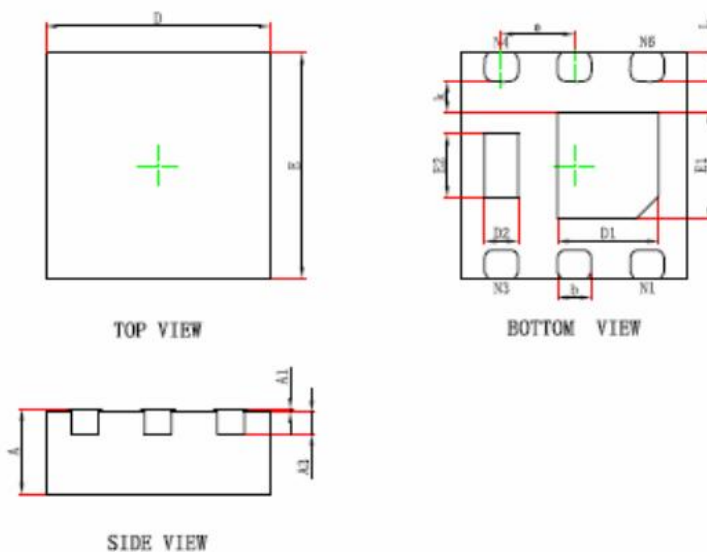
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Package Dimensions DFN2x2-6L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	1.924	2.076	0.076	0.082
E	1.924	2.076	0.076	0.082
D1	0.800	1.000	0.031	0.039
E1	0.850	1.050	0.033	0.041
D2	0.200	0.400	0.008	0.016
E2	0.460	0.660	0.018	0.026
k	0.200MIN.		0.008MIN.	
b	0.250	0.350	0.010	0.014
e	0.650TYP.		0.026TYP.	
L	0.174	0.326	0.007	0.013



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