20V N-Ch Power MOSFET

V_{DS}		20	V
$R_{DS(on),typ}$	V_{GS}=4.5V	13	mΩ
$I_{D\ (Sillicon\ Limited)}$		8	A

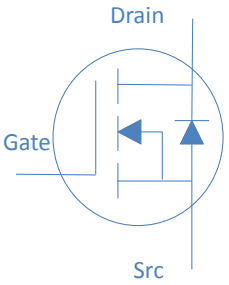
Feature

◇ High Speed Power Switching, Logic Level
◇ Enhanced Avalanche Ruggedness
◇ Lead Free, Halogen Free

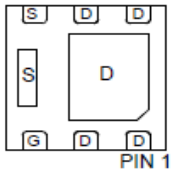
Application

◇ Hard Switching and High Speed Circuit
◇ DC/DC in Telecoms and Inductrial

DFN2*2



Bottom View



Part Number	Package	Marking
HTL140N02	DFN2*2	1L

Absolute Maximum Ratings at T_j=25℃ (unless otherwise specified)

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current (Silicon Limited)	I_D	T_C=25℃	8	A
		T_C=70℃	6.2	
Drain to Source Voltage	V_{DS}	-	20	V
Gate to Source Voltage	V_{GS}	-	±12	V
Pulsed Drain Current	I_{DM}	-	32	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.1mH, T_C=25℃	5.0	mJ
Power Dissipation	P_D	T_C=25℃	2.08	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to150	℃

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	60	℃/W
Thermal Resistance Junction-Case	$R_{\theta JC}$	12	℃/W

Electrical Characteristics at T_j=25℃ (unless otherwise specified)

Static Characteristics

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	20	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA	0.4	0.75	1.2	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=16V, T_j=25℃	-	-	1	μA
		V_{GS}=0V, V_{DS}=16V, T_j=125℃	-	-	10	
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
Drain to Source on Resistance	$R_{DS(on)}$	V_{GS}=4.5V, I_D=8A	-	13	14.8	mΩ
		V_{GS}=2.5V, I_D=5A	-	19	23	
Transconductance	g_{fs}	V_{DS}=5V, I_D=8A	-	9	-	S

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=10V, f=1MHz	-	1192	-	pF
Output Capacitance	C_{oss}		-	203	-	
Reverse Transfer Capacitance	C_{rss}		-	174	-	
Total Gate Charge	Q_g(10V)	V_{DD}=10V, I_D=8A, V_{GS}=4.5V	-	14.2	-	nC
Gate to Source Charge	Q_{gs}		-	1.8	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	5.0	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=10V, I_D=1A, V_{GS}=4.5V, R_G=6Ω,	-	15	-	ns
Rise time	t_r		-	18	-	
Turn off Delay Time	$t_{d(off)}$		-	35	-	
Fall Time	t_f		-	20	-	

Reverse Diode Characteristics

Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_F=8A	-		1.2	V

Fig 1. Typical Output Characteristics

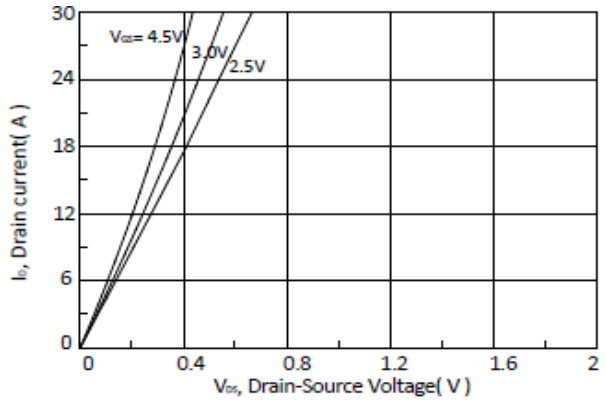


Figure 2. On-Resistance vs. Gate-Source Voltage

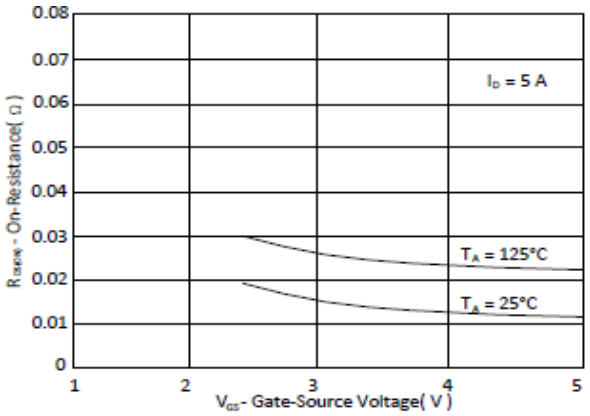


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

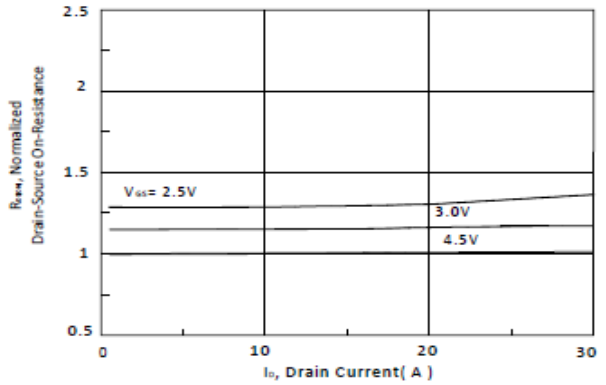


Figure 4. Normalized On-Resistance vs. Junction Temperature

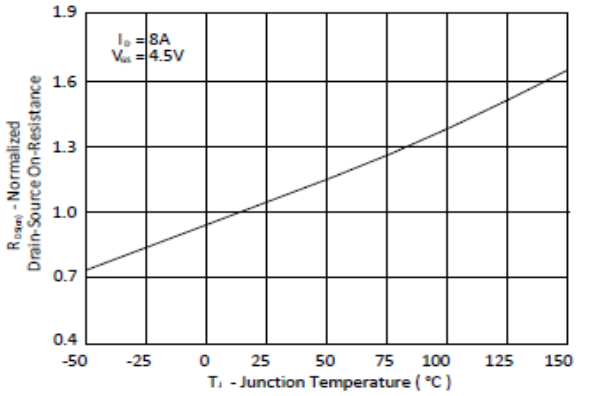


Figure 5. Typical Transfer Characteristics

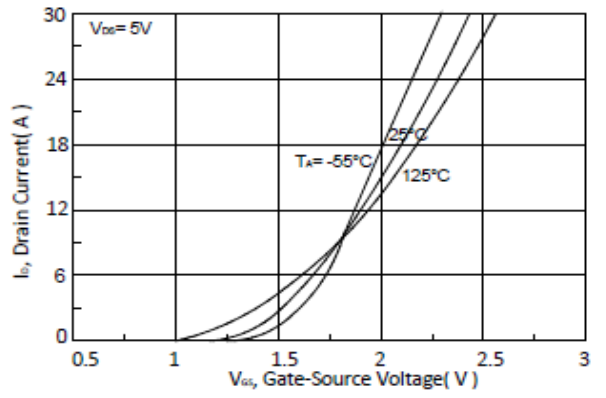


Figure 6. Typical Source-Drain Diode Forward Voltage

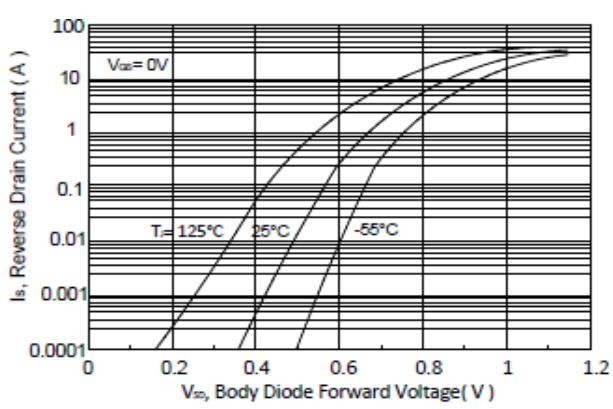


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

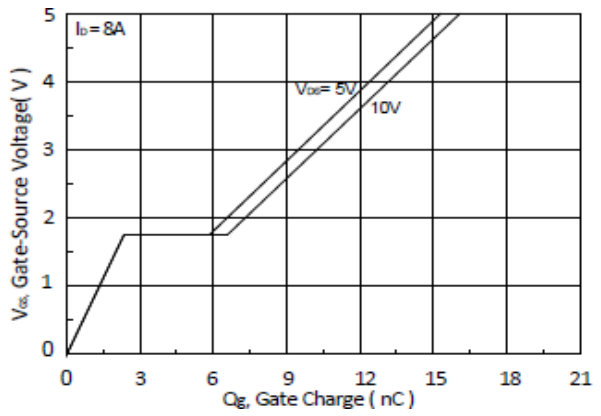


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

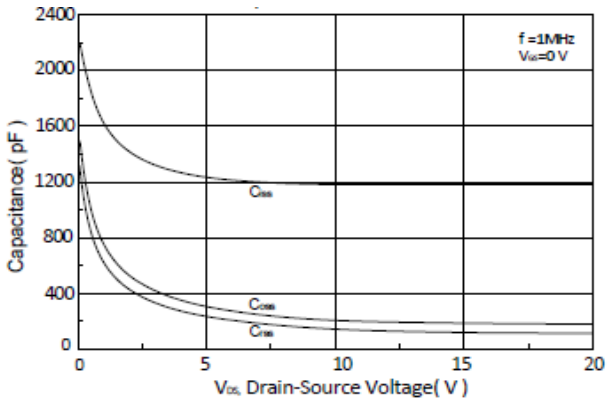


Figure 9. Maximum Safe Operating Area

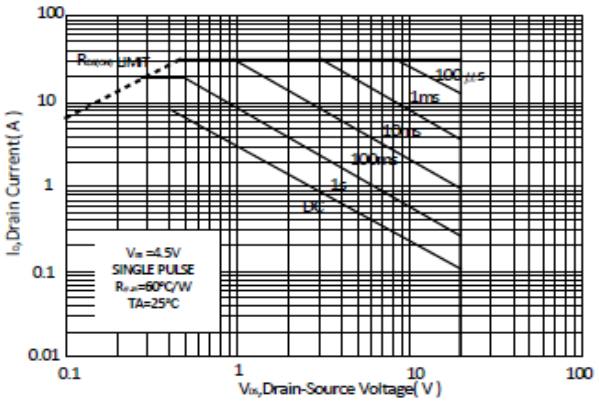


Figure 10. Single Pulse Maximum Power Dissipation

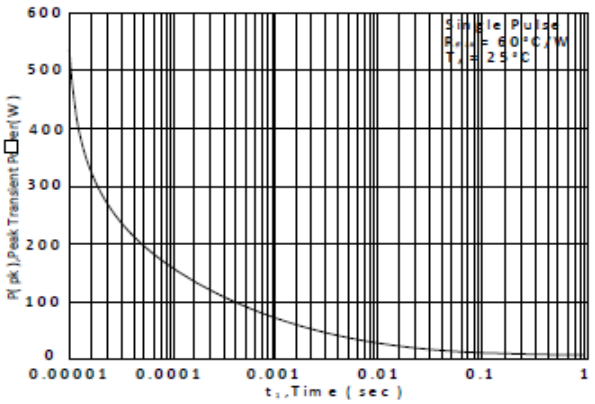
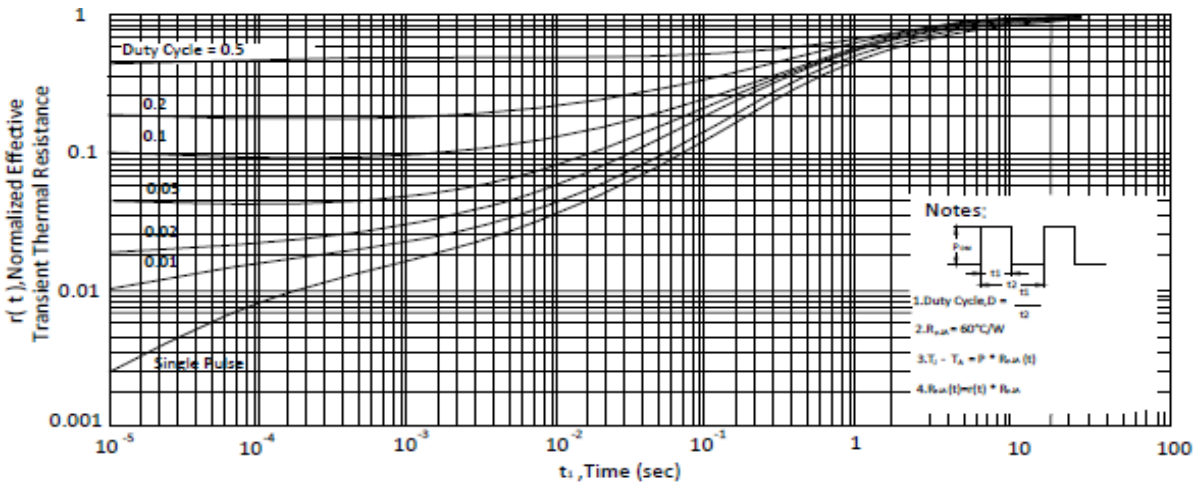
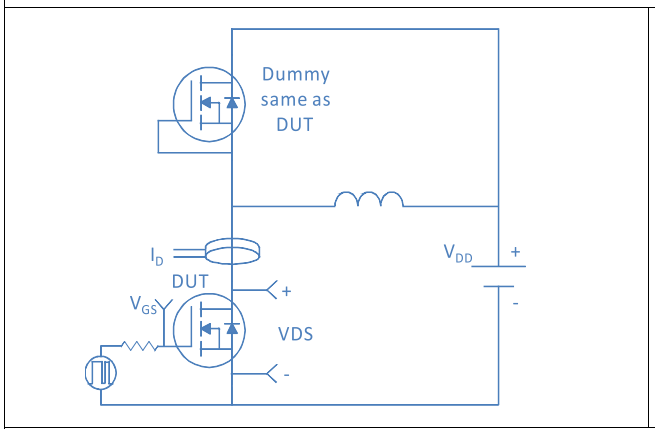
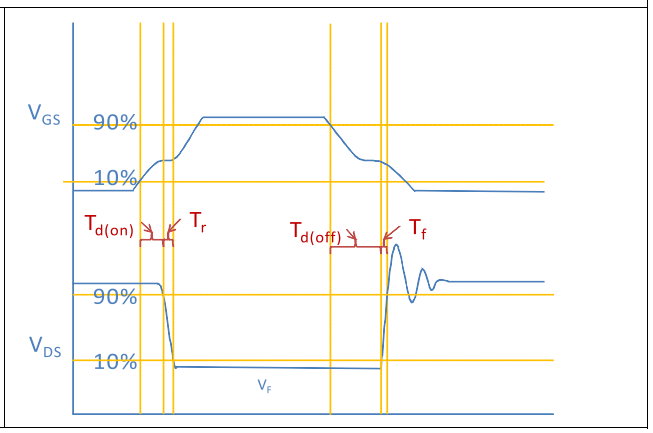


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient

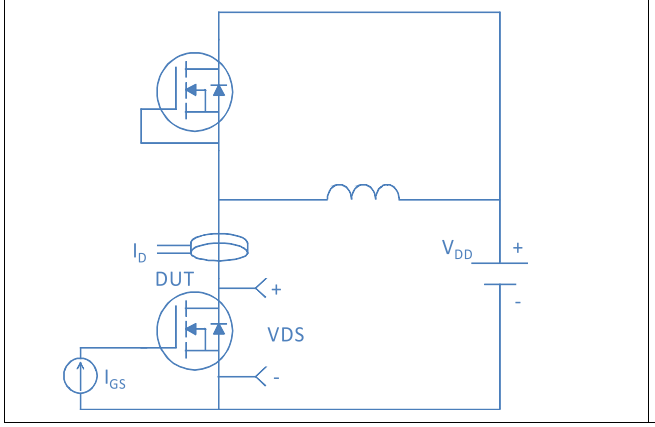


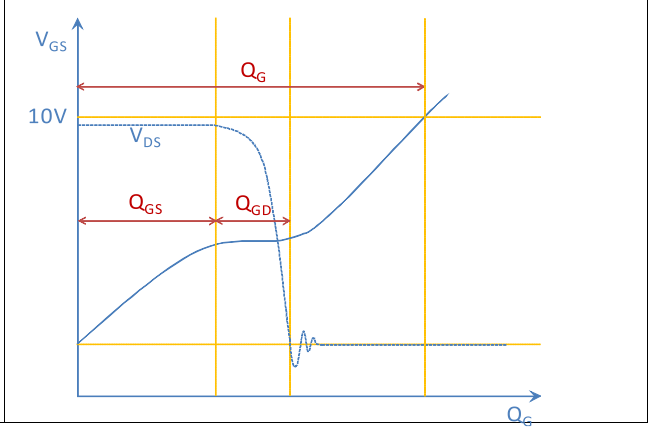
Inductive switching Test



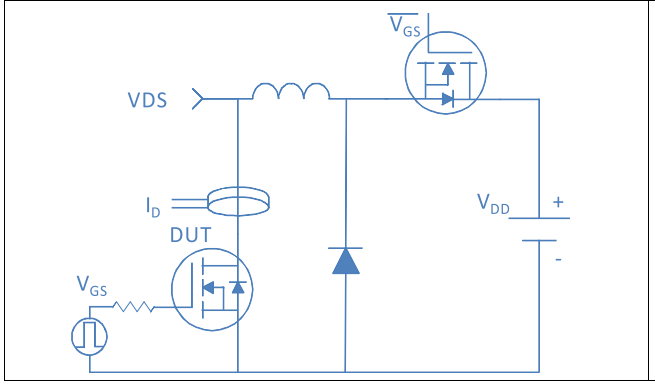


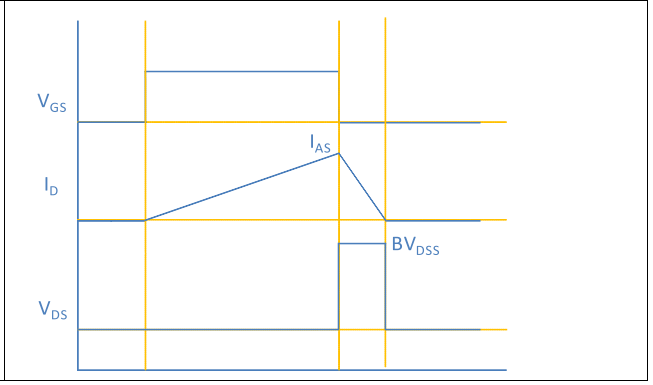
Gate Charge Test



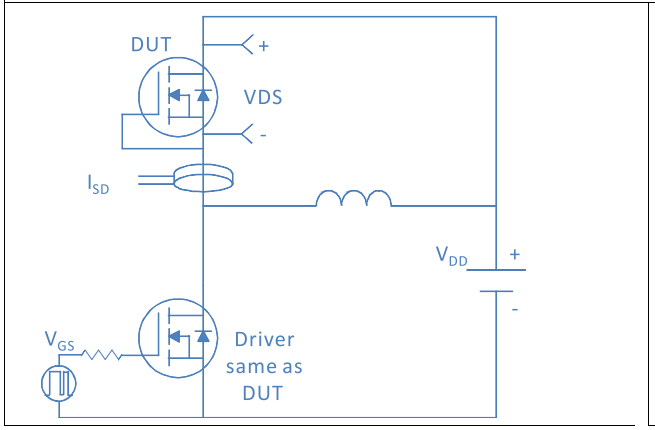


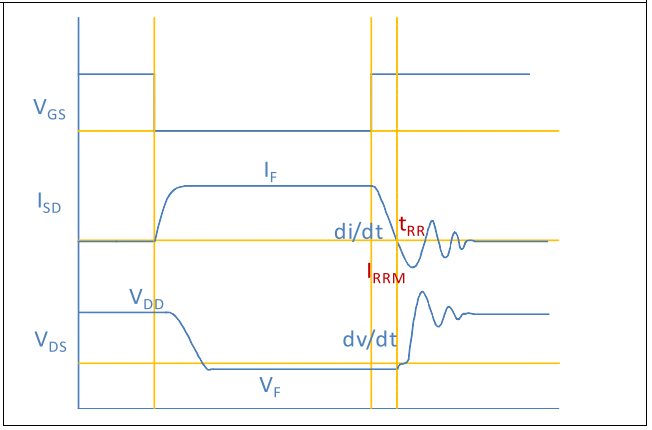
Uclamped Inductive Switching (UIS) Test





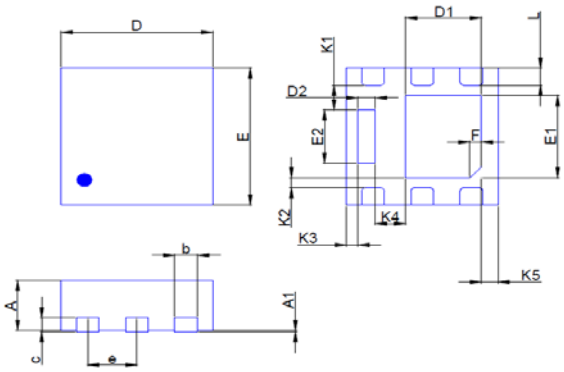
Diode Recovery Test





Package Outline

DFN2*2_P, 6leads



Dimension in mm

Dimension	A	A1	b	c	D	D1	D2	E	E1	E2	e	F	f	K1	K2	L	K3	K4	K5
Min.	0.50	0.00	0.25		1.9	1.0	0.13	1.9	1.1	0.65				0.306	0.10	0.2	0.10	0.27	0.17
Typ.		0.02	0.30	0.1	2.0	1.1	0.25	2.0	1.2	0.75	0.65	0.15	45°	0.356	0.15	0.25	0.15		0.22
Max.	0.65	0.05	0.35		2.1	1.2	0.35	2.1	1.3	0.88				0.406	0.20	0.3	0.20		0.27

Recommended minimum pads