

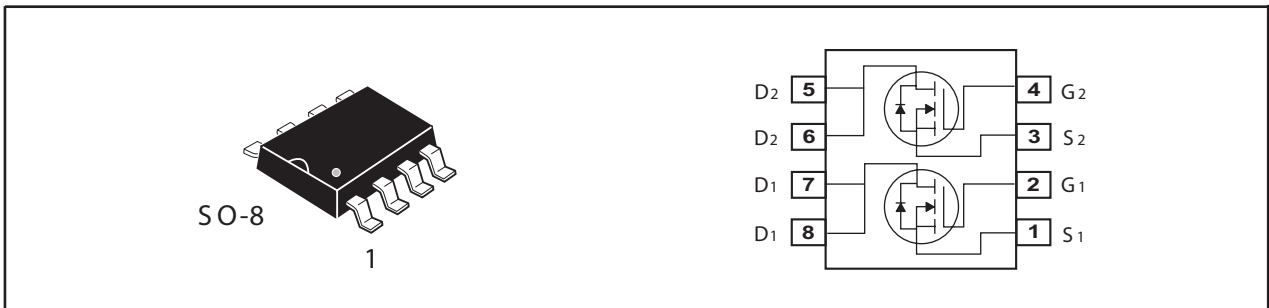


Dual N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY		
VDSS	ID	RDS(ON) (mΩ) Max
100V	2.8A	155 @ VGS=10V
		192 @ VGS=4.5V

FEATURES

- Super high dense cell design for low $R_{DS(ON)}$.
- Rugged and reliable.
- Surface Mount Package.



ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Limit	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current-Continuous ^a	$T_A=25^\circ\text{C}$	2.8
		$T_A=70^\circ\text{C}$	2.2
I_{DM}	-Pulsed ^b	10	A
E_{AS}	Single Pulse Avalanche Energy ^d	12	mJ
P_D	Maximum Power Dissipation ^a	$T_A=25^\circ\text{C}$	2
		$T_A=70^\circ\text{C}$	1.28
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 to 150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient ^a	62.5	$^\circ\text{C/W}$
-----------------	--	------	--------------------

STM121N

Ver 1.1

ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	100			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =80V , V _{GS} =0V			1	uA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±20V , V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1	1.9	3	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V , I _D =1.4A		124	155	m ohm
		V _{GS} =4.5V , I _D =1.25A		142	192	m ohm
g _{FS}	Forward Transconductance	V _{DS} =10V , I _D =1.4A		5		S
DYNAMIC CHARACTERISTICS ^c						
C _{ISS}	Input Capacitance	V _{DS} =25V, V _{GS} =0V f=1.0MHz		725	1015	pF
C _{OSS}	Output Capacitance			50	70	pF
C _{RSS}	Reverse Transfer Capacitance			32	60	pF
SWITCHING CHARACTERISTICS ^c						
t _{D(ON)}	Turn-On Delay Time	V _{DD} =50V I _D =1A V _{GS} =10V R _{GEN} = 6 ohm		11	22	ns
t _r	Rise Time			10.7	20	ns
t _{D(OFF)}	Turn-Off Delay Time			21.5	43	ns
t _f	Fall Time			11	22	ns
Q _g	Total Gate Charge	V _{DS} =50V, I _D =1.4A, V _{GS} =10V		10	14	nC
Q _{gs}	Gate-Source Charge	V _{DS} =50V, I _D =1.4A, V _{GS} =10V		1.4	2	nC
Q _{gd}	Gate-Drain Charge			2.6	3.6	nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =1A		0.78	1.3	V

Notes

- Surface Mounted on FR4 Board, t ≤ 10sec.
- Pulse Test: Pulse Width ≤ 300us, Duty Cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.
- Starting T_J=25°C, L=0.5mH, V_{DD} = 50V. (See Figure13)

Jul,25,2012

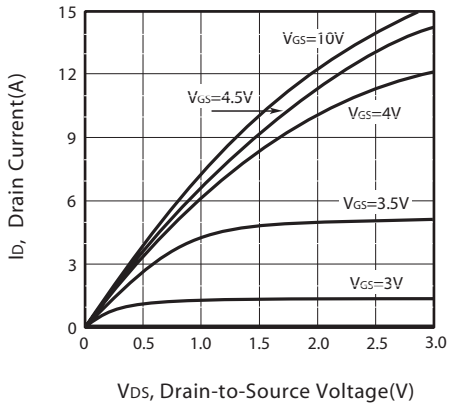


Figure 1. Output Characteristics

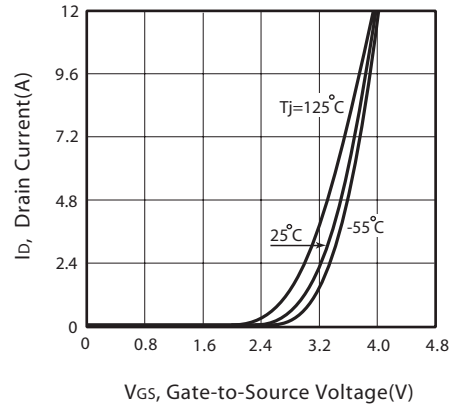


Figure 2. Transfer Characteristics

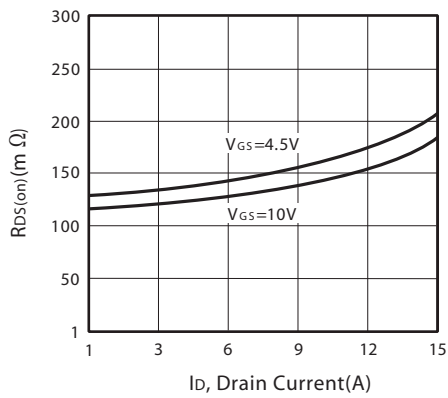


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

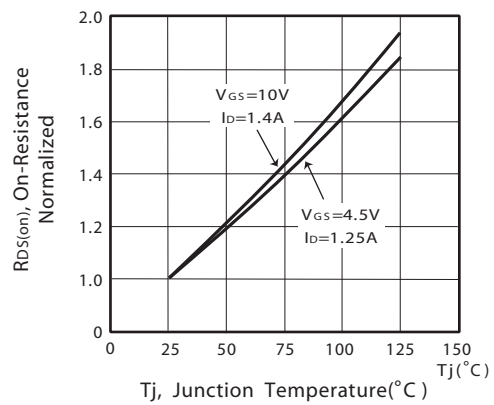


Figure 4. On-Resistance Variation with Drain Current and Temperature

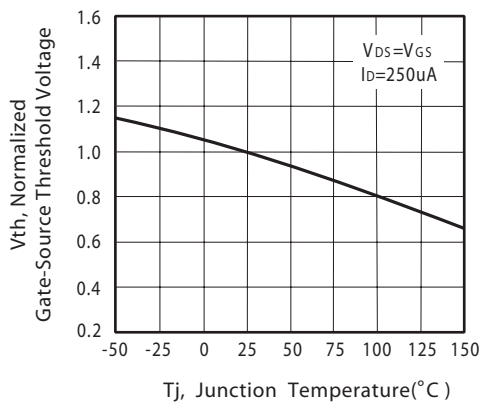


Figure 5. Gate Threshold Variation with Temperature

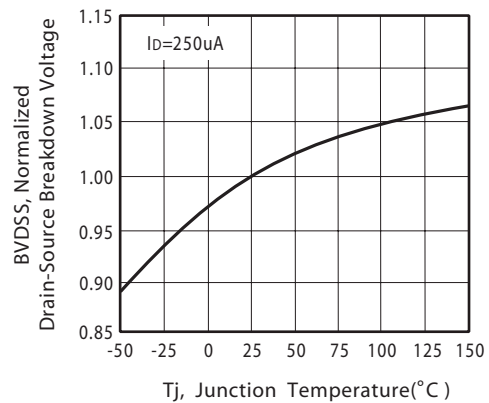


Figure 6. Breakdown Voltage Variation with Temperature

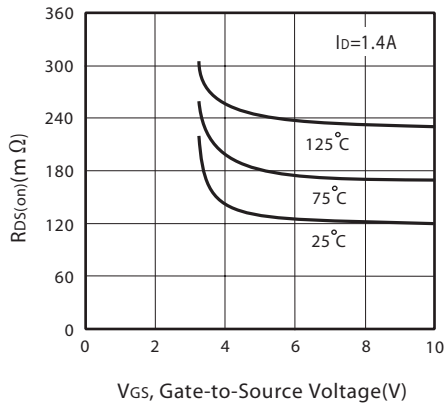


Figure 7. On-Resistance vs. Gate-Source Voltage

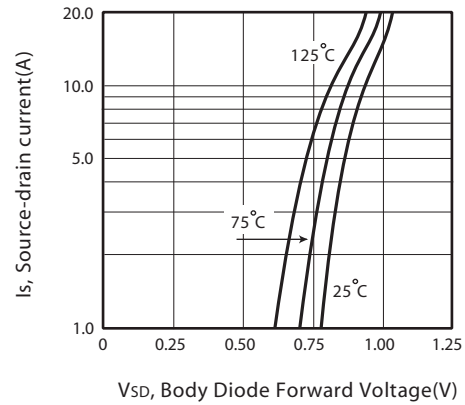


Figure 8. Body Diode Forward Voltage Variation with Source Current

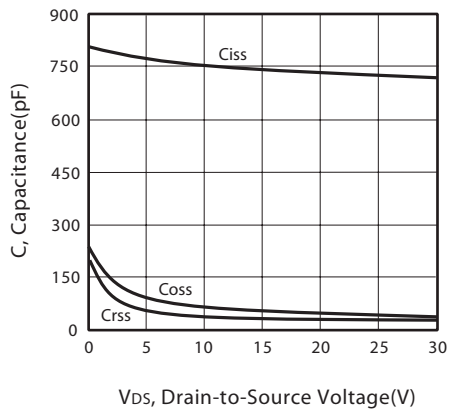


Figure 9. Capacitance

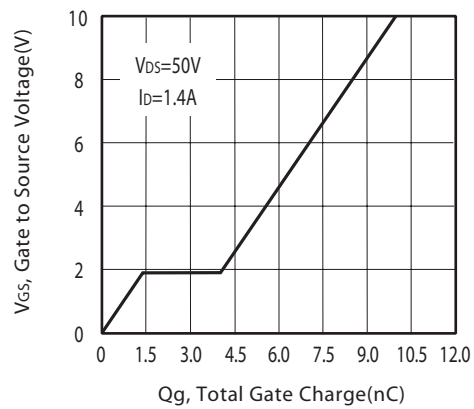


Figure 10. Gate Charge

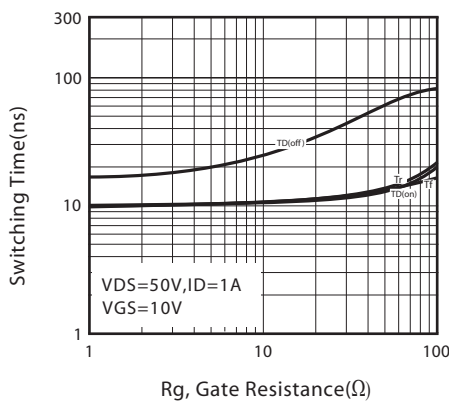


Figure 11. switching characteristics

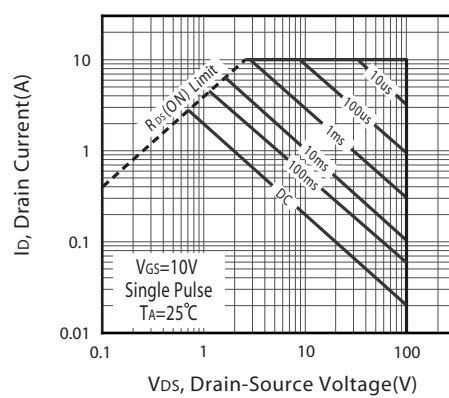
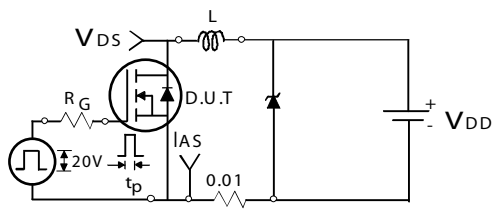
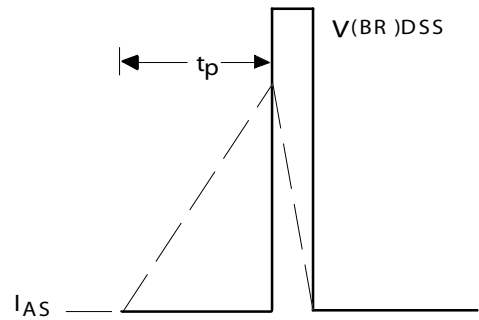


Figure 12. Maximum Safe Operating Area



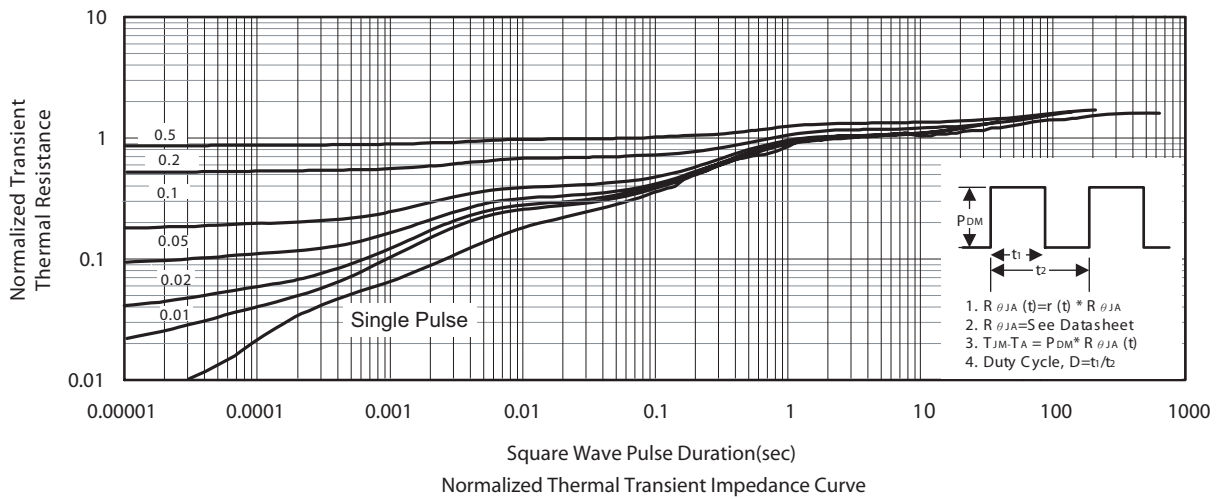
Unclamped Inductive Test Circuit

Figure 13a.



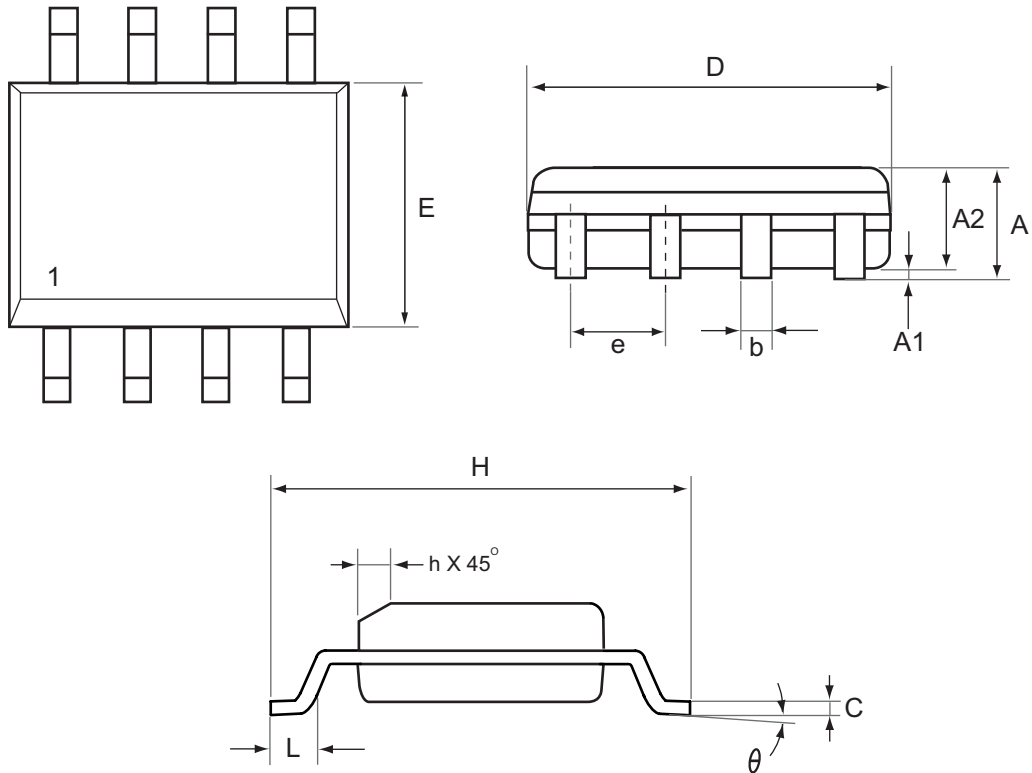
Unclamped Inductive Waveforms

Figure 13b.



PACKAGE OUTLINE DIMENSIONS

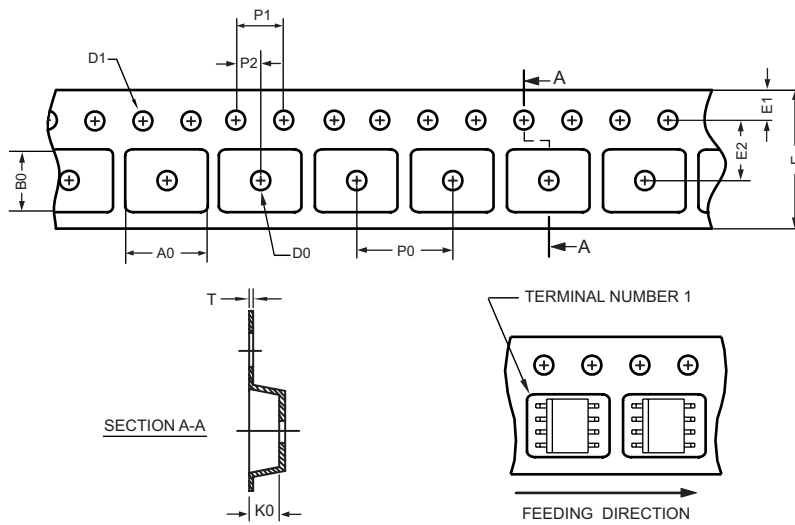
SO-8



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
A2	1.25	1.63	0.049	0.064
b	0.31	0.51	0.012	0.020
C	0.17	0.25	0.007	0.010
D	4.80	5.00	0.189	0.197
E	3.70	4.00	0.146	0.157
e	1.27 REF.		0.050 BSC	
H	5.80	6.20	0.228	0.244
L	0.40	1.27	0.016	0.050
θ	0°	8°	0°	8°
h	0.25	0.50	0.010	0.020

SO-8 Tape and Reel Data

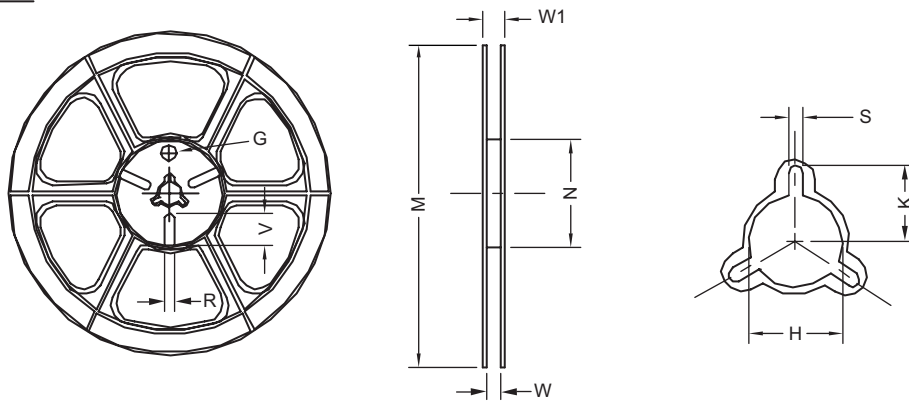
SO-8 Carrier Tape



unit: mm

PACKAGE	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
SOP 8N 150mil	6.50 ±0.15	5.25 ±0.10	2.10 ±0.10	φ 1.5 (MIN)	φ 1.55 ±0.10	12.0 +0.3 -0.1	1.75 ±0.10	5.5 ±0.10	8.0 ±0.10	4.0 ±0.10	2.0 ±0.10	0.30 ±0.013

SO-8 Reel



UNIT: mm

TAPE SIZE	REEL SIZE	M	N	W	W1	H	K	S	G	R	V
12 mm	φ 330	330 ± 1	62 ±1.5	12.4 + 0.2	16.8 - 0.4	φ 12.75 + 0.15	---	2.0 ±0.15	---	---	---