SamHop Microelectronics Corp.

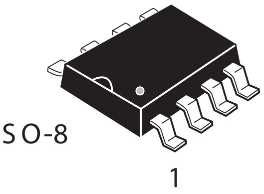
STM8362

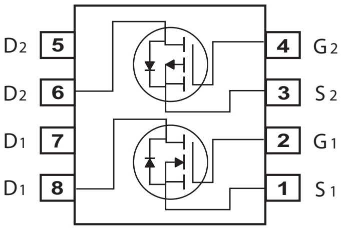
Ver 1.1

Dual Enhancement Mode Field Effect Transistor (N and P Channel)

PRODUCT SUMMARY (N-Channel)		
V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ) Max
40V	6.6A	29 @ VGS=10V
		45 @ VGS=4.5V

PRODUCT SUMMARY (P-Channel)		
V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ) Max
-40V	-5.8A	38 @ VGS=-10V
		60 @ VGS=-4.5V





ABSOLUTE MAXIMUM RATINGS (T_C=25°C unless otherwise noted)

Symbol	Parameter		N-Channel	P-Channel	Units
V_{DS}	Drain-Source Voltage		40	-40	V
V_{GS}	Gate-Source Voltage		±20	±20	V
I_D	Drain Current-Continuous [a]	T_C=25°C	6.6	-5.8	A
		T_C=70°C	5.3	-4.6	A
I_{DM}	-Pulsed [b]		24	-21	A
E_{AS}	Sigle Pulse Avalanche Energy [d]		36	30	mJ
P_D	Maximum Power Dissipation [a]	T_C=25°C	2		W
		T_C=70°C	1.28		W
T_J, T_{STG}	Operating Junction and Storage Temperature Range		-55 to 150		°C

THERMAL CHARACTERISTICS

$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient [a]	62.5	°C/W

N-Channel ELECTRICAL CHARACTERISTICS (T$_C$=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	40			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=32V , 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	1.4	1.8	3	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=10V , I_D=6.6A		23	29	m ohm
		V_{GS}=4.5V , I_D=5.3A		33	45	m ohm
g_{FS}	Forward Transconductance	V_{DS}=5V , I_D=6.6A		18		S
DYNAMIC CHARACTERISTICS [c]						
C_{ISS}	Input Capacitance	V_{DS}=20V,V_{GS}=0V f=1.0MHz		755		pF
C_{OSS}	Output Capacitance			81		pF
C_{RSS}	Reverse Transfer Capacitance			67		pF
SWITCHING CHARACTERISTICS [c]						
$t_{D(ON)}$	Turn-On Delay Time	V_{DD}=20V I_D=1A V_{GS}=10V R_{GEN}= 6 ohm		12		ns
t_r	Rise Time			14		ns
$t_{D(OFF)}$	Turn-Off Delay Time			18		ns
t_f	Fall Time			20		ns
Q_g	Total Gate Charge	V_{DS}=20V,I_D=6.6A,V_{GS}=10V		15		nC
		V_{DS}=20V,I_D=6.6A,V_{GS}=4.5V		7.4		nC
Q_{gs}	Gate-Source Charge	V_{DS}=20V,I_D=6.6A, V_{GS}=10V		1.9		nC
Q_{gd}	Gate-Drain Charge			4.1		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
I_S	Maximum Continuous Drain-Source Diode Forward Current				2.0	A
V_{SD}	Diode Forward Voltage [b]	V_{GS}=0V,I_S=2.0A		0.82	1.3	V

P-Channel ELECTRICAL CHARACTERISTICS (T_C=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	-40			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-32V , 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	-1.4	-2.0	-3	V
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=-10V , I_D=-5.8A		30	38	m ohm
		V_{GS}=-4.5V , I_D=-4.6A		45	60	m ohm
g_{FS}	Forward Transconductance	V_{DS}=-5V , I_D=-5.8A		18		S
DYNAMIC CHARACTERISTICS [c]						
C_{ISS}	Input Capacitance	V_{DS}=-20V,V_{GS}=0V f=1.0MHz		1000		pF
C_{OSS}	Output Capacitance			123		pF
C_{RSS}	Reverse Transfer Capacitance			107		pF
SWITCHING CHARACTERISTICS [c]						
$t_{D(ON)}$	Turn-On Delay Time	V_{DD}=-20V I_D=-1A V_{GS}=-10V R_{GEN}= 6 ohm		18		ns
t_r	Rise Time			22		ns
$t_{D(OFF)}$	Turn-Off Delay Time			65		ns
t_f	Fall Time			20		ns
Q_g	Total Gate Charge	V_{DS}=-20V,I_D=-5.5A,V_{GS}=-10V		22		nC
		V_{DS}=-20V,I_D=-5.5A,V_{GS}=-4.5V		10.7		nC
Q_{gs}	Gate-Source Charge	V_{DS}=-20V,I_D=-5.5A, V_{GS}=-10V		2.1		nC
Q_{gd}	Gate-Drain Charge			6		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
I_S	Maximum Continuous Drain-Source Diode Forward Current				-2.0	A
V_{SD}	Diode Forward Voltage [b]	V_{GS}=0V,I_S=-2.0A		-0.81	-1.3	V

Notes

a.Surface Mounted on FR4 Board,t ≤ 10sec.
b.Pulse Test:Pulse Width ≤ 300us, Duty Cycle ≤ 2%.
c.Guaranteed by design, not subject to production testing.
d.Starting T_J=25°C,L=0.5mH,V_{DD} = 20V,V_{GS}=10V.(See Figure13)

N-Channel

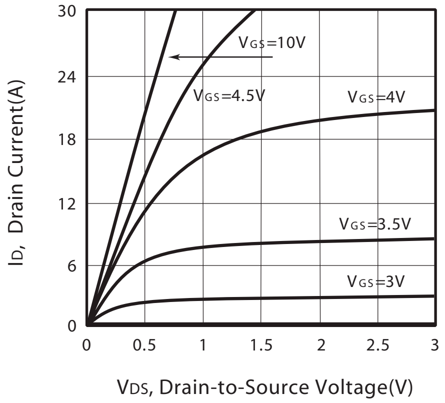


Figure 1. Output Characteristics

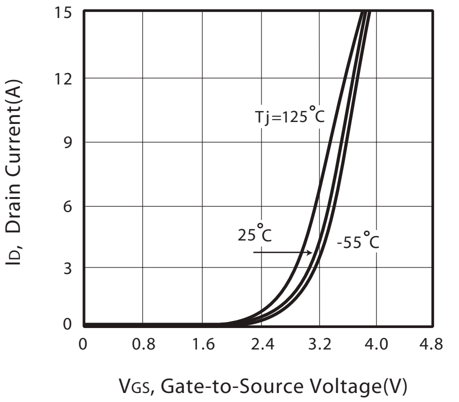


Figure 2. Transfer Characteristics

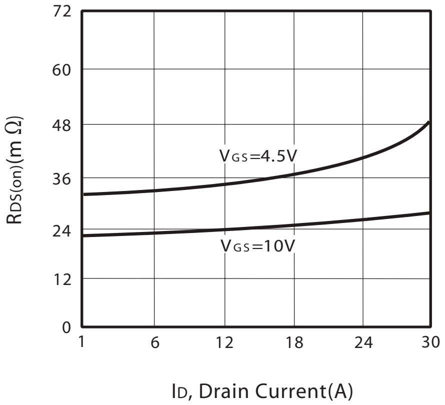


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

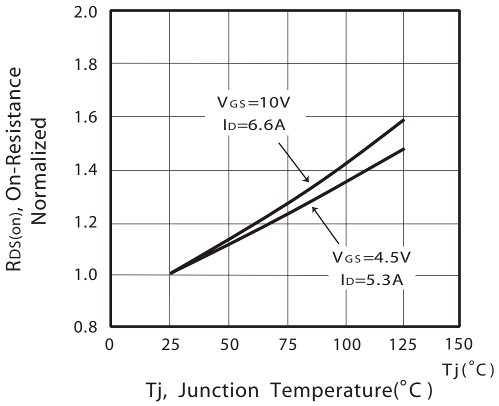


Figure 4. On-Resistance Variation with Drain Current and Temperature

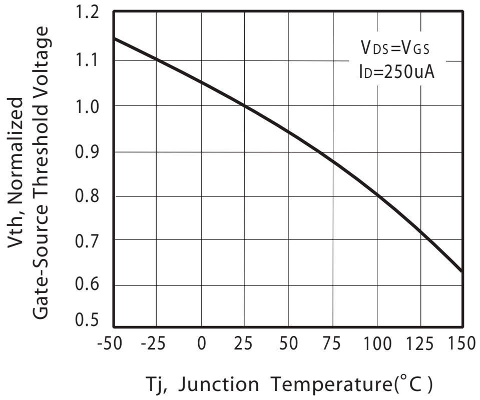


Figure 5. Gate Threshold Variation with Temperature

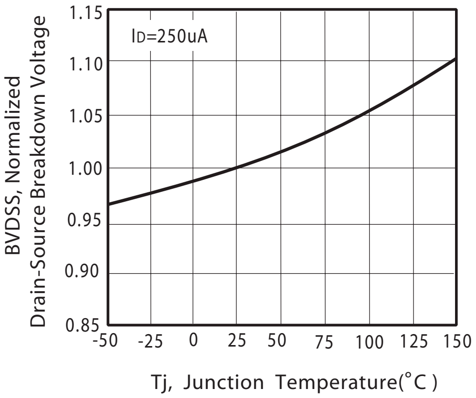


Figure 6. Breakdown Voltage Variation with Temperature

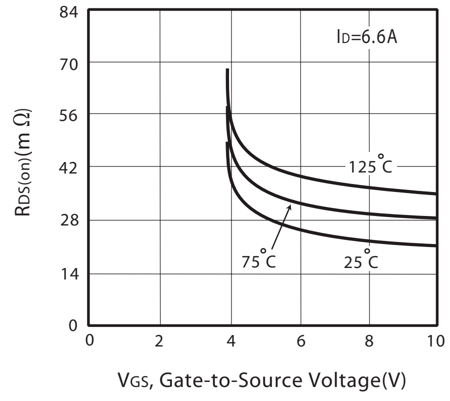


Figure 7. On-Resistance vs.
Gate-Source Voltage

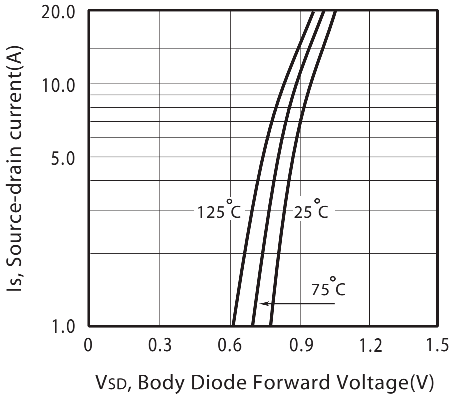


Figure 8. Body Diode Forward Voltage
Variation with Source Current

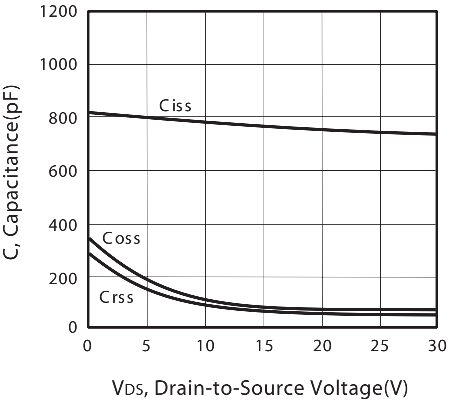


Figure 9. Capacitance

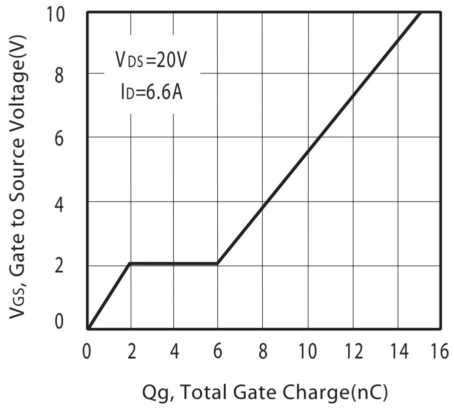


Figure 10. Gate Charge

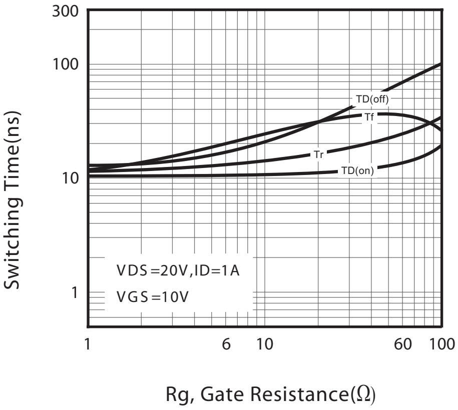


Figure 11. switching characteristics

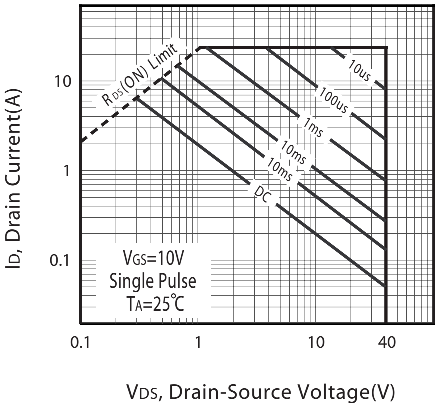
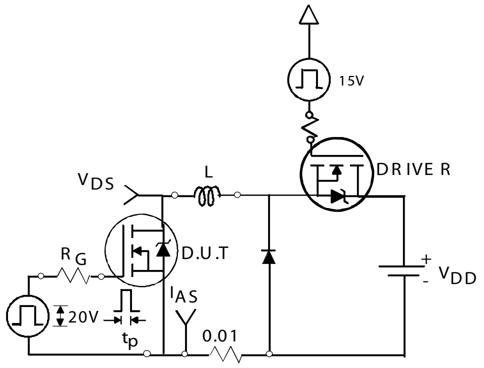
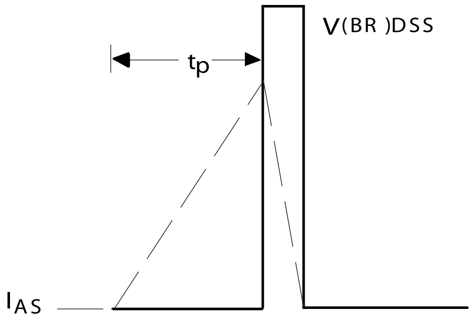


Figure 12. Maximum Safe Operating Area



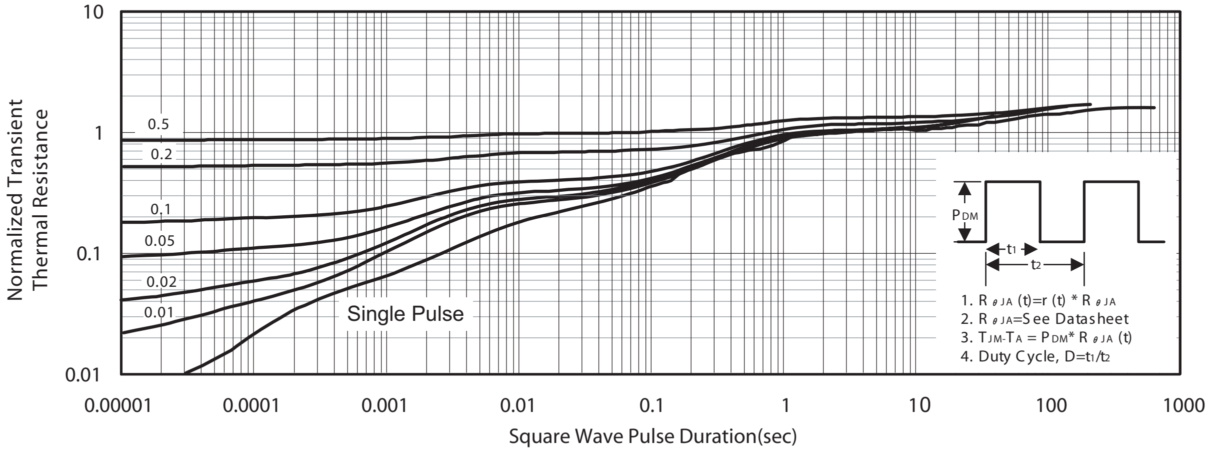
Unclamped Inductive Test Circuit

Figure 13a.



Unclamped Inductive Waveforms

Figure 13b.



Normalized Thermal Transient Impedance Curve

P-Channel

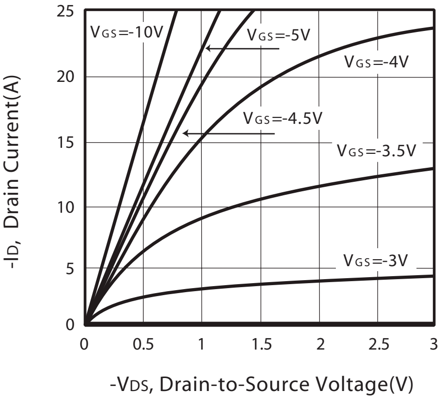


Figure 1. Output Characteristics

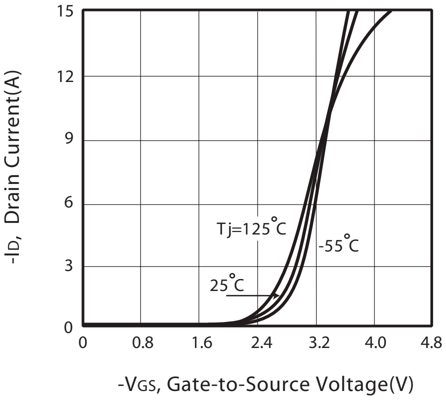
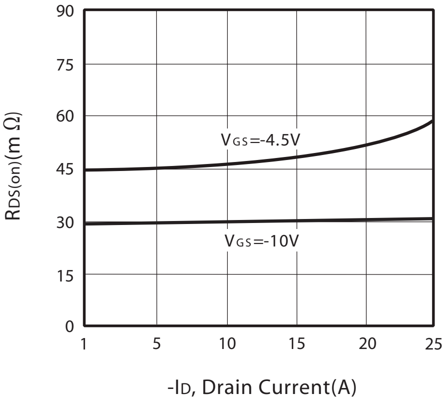


Figure 2. Transfer Characteristics



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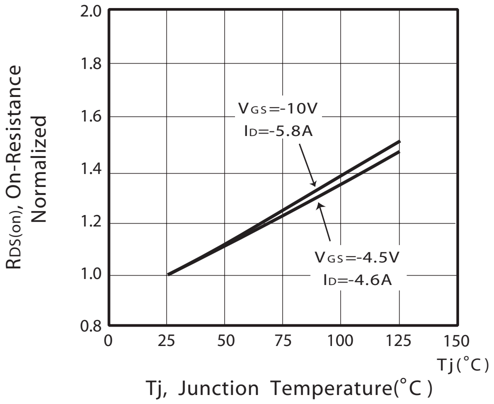


Figure 4. On-Resistance Variation with Drain Current and Temperature

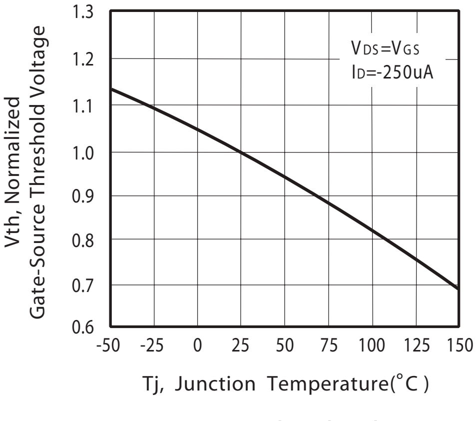


Figure 5. Gate Threshold Variation with Temperature

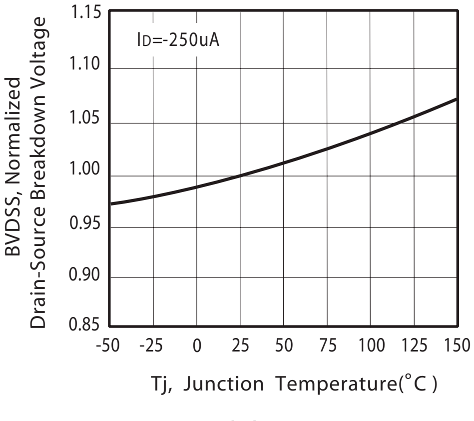


Figure 6. Breakdown Voltage Variation with Temperature

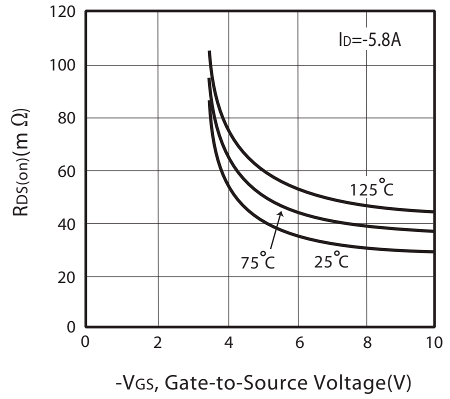


Figure 7. On-Resistance vs. Gate-Source Voltage

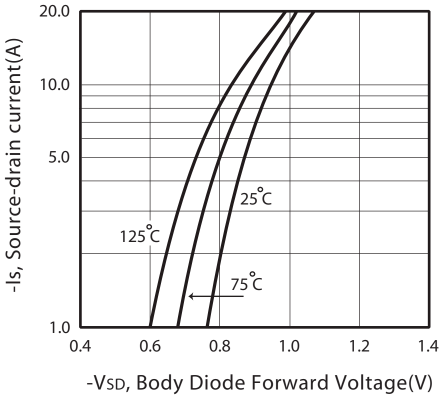


Figure 8. Body Diode Forward Voltage Variation with Source Current

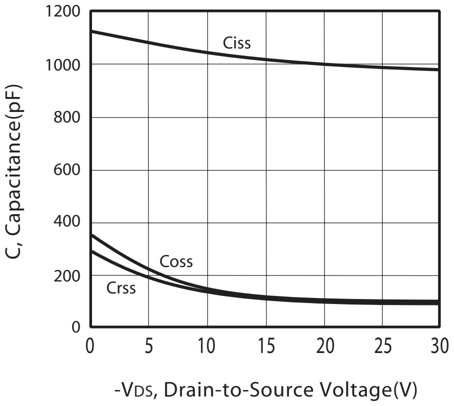
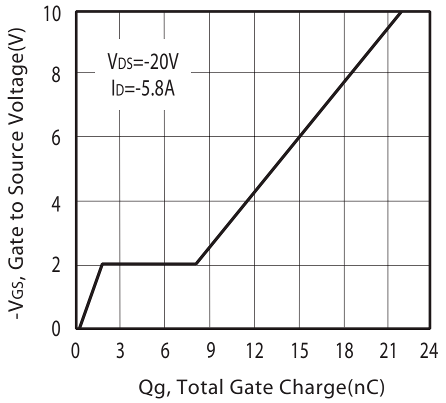


Figure 9. Capacitance



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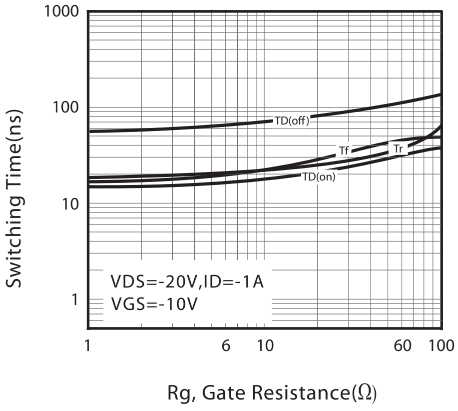


Figure 11. switching characteristics

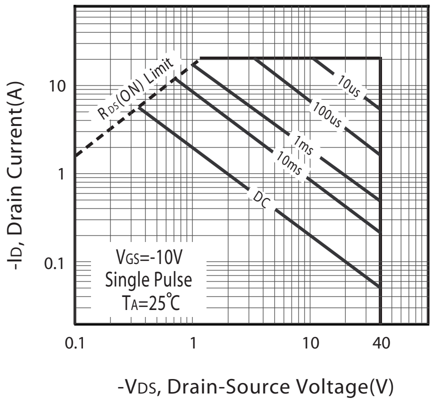
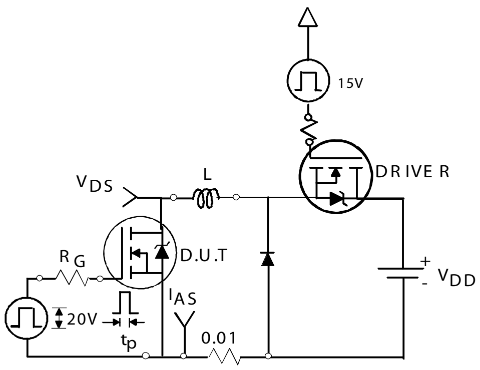
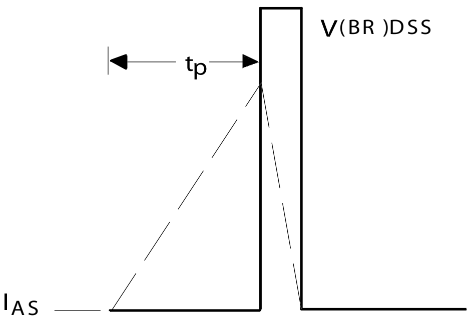


Figure 12. Maximum Safe Operating Area



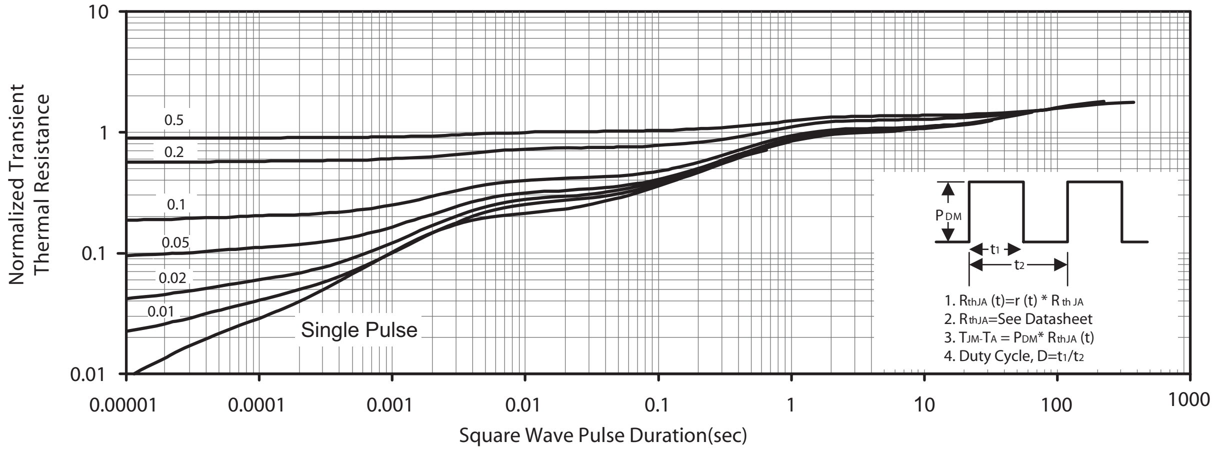
Unclamped Inductive Test Circuit

Figure 13a.



Unclamped Inductive Waveforms

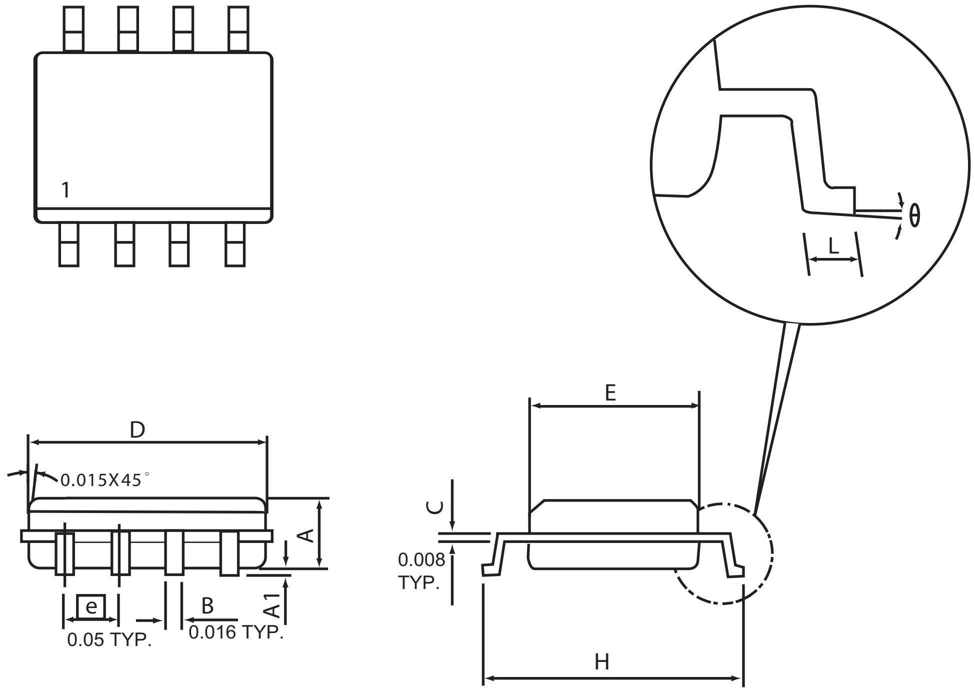
Figure 13b.



Normalized Thermal Transient Impedance Curve

PACKAGE OUTLINE DIMENSIONS

SO-8

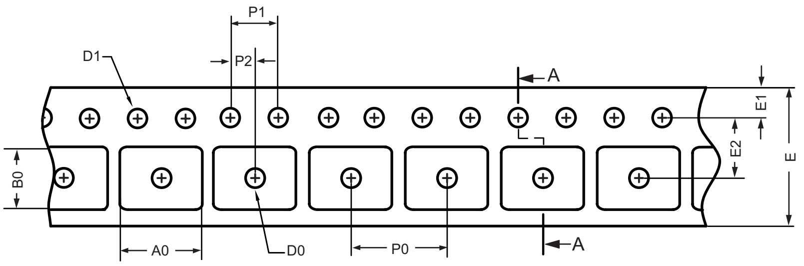


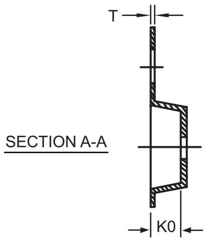
SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
D	4.80	4.98	0.189	0.196
E	3.81	3.99	0.150	0.157
H	5.79	6.20	0.228	0.244
L	0.41	1.27	0.016	0.050
θ	0°	8°	0°	8°

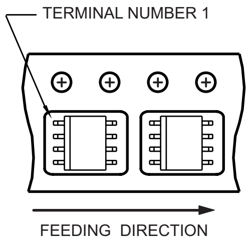
Notes：SO-8 package weight：0.083g

SO-8 Tape and Reel Data

SO-8 Carrier Tape



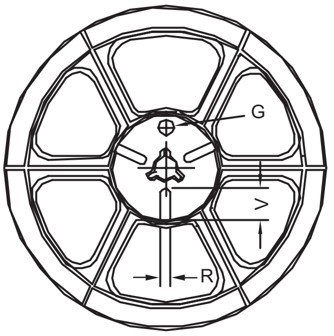


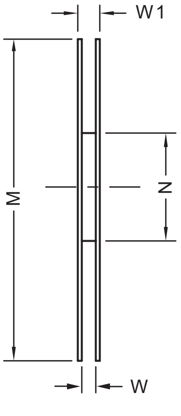


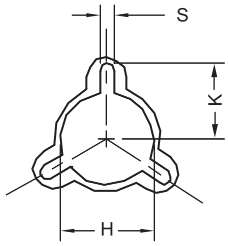
unit:㎜

PACKAGE	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
SOP 8N 150㏕	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:㎜

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