

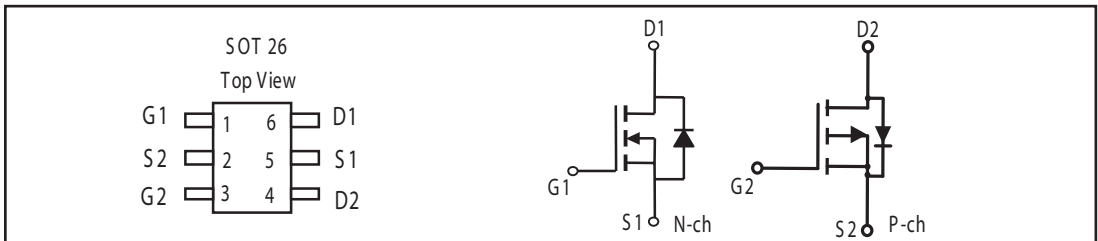


STS 3621

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

PRODUCT SUMMARY (N-Channel)		
V _{DSS}	I _D	R _{DS(ON)} (mΩ) Max
30V	3A	50 @ V _{GS} = 10V
		65 @ V _{GS} = 4.5V

PRODUCT SUMMARY (P-Channel)		
V _{DSS}	I _D	R _{DS(ON)} (mΩ) Max
-30V	-2A	90 @ V _{GS} = -10V
		135 @ V _{GS} = -4.5V



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

Parameter		Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage		V _{DS}	30	-30	V
Gate-Source Voltage		V _{GS}	±20	±20	V
Drain Current-Continuous ^a @ T _a	25°C	I _D	3	-2	A
	70°C		2.7	1.8	A
-Pulsed ^b		I _{DM}	12	-8	A
Drain-Source Diode Forward Current ^a		I _S	1.25	-1.25	A
Maximum Power Dissipation ^a	T _a =25°C	P _D	1.25		W
	T _a =70°C		0.8		
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55 to 150		°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient ^a	R _{θJA}	100	°C/W
--	------------------	-----	------

STS 3621

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

Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250μA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24V, V _{GS} = 0V			1	μA
Gate-Body Leakage	I _{GSS}	V _{GS} = ± 20V, V _{DS} = 0V			±100	nA
ON CHARACTERISTICS^b						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1	1.7	3	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 3A		40	50	m-ohm
		V _{GS} = 4.5V, I _D = 2A		52	65	m-ohm
On-State Drain Current	I _{D(on)}	V _{DS} = 5V, V _{GS} = 4.5V	10			A
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D = 3A		9		S
DYNAMIC CHARACTERISTICS^c						
Input Capacitance	C _{ISS}	V _{DS} = 15V, V _{GS} = 0V f = 1.0MHz		330		pF
Output Capacitance	C _{OSS}			70		pF
Reverse Transfer Capacitance	C _{RSS}			45		pF
SWITCHING CHARACTERISTICS^c						
Turn-On Delay Time	t _{D(ON)}	V _{DD} = 15V, I _D = 1A, V _{GS} = 10V, R _{GEN} = 6 ohm		9		ns
Rise Time	t _r			9		ns
Turn-Off Delay Time	t _{D(OFF)}			15		ns
Fall Time	t _f			10		ns
Total Gate Charge	Q _g	V _{DS} = 15V, I _D = 3A, V _{GS} = 10V		6		nC
		V _{DS} = 15V, I _D = 3A, V _{GS} = 4.5V		3		nC
Gate-Source Charge	Q _{gs}	V _{DS} = 15V, I _D = 3A V _{GS} = 10V		1		nC
Gate-Drain Charge	Q _{gd}			1.5		nC

STS 3621

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

Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250uA	-30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-24V, V _{GS} =0V			-1	uA
Gate-Body Leakage	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS^b						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250uA	-1	-1.8	-3	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-2A		75	90	m-ohm
		V _{GS} =-4.5V, I _D =-1A		120	135	m-ohm
On-State Drain Current	I _{D(ON)}	V _{DS} =-5V, V _{GS} =-10V	8			A
Forward Transconductance	g _{FS}	V _{DS} =-5V, I _D =-3A		5.5		S
DYNAMIC CHARACTERISTICS^c						
Input Capacitance	C _{ISS}	V _{DS} =-15V, V _{GS} =0V f=1.0MHz		360		pF
Output Capacitance	C _{OSS}			84		pF
Reverse Transfer Capacitance	C _{RSS}			52		pF
SWITCHING CHARACTERISTICS^c						
Turn-On Delay Time	t _{D(ON)}	V _{DD} =-15V, I _D =-1A, V _{GEN} =-10V, R _{GEN} =6 ohm		6		ns
Rise Time	t _r			9.5		ns
Turn-Off Delay Time	t _{D(OFF)}			48		ns
Fall Time	t _f			25		ns
Total Gate Charge	Q _g	V _{DS} =-15V, I _D =-2A, V _{GS} =-10V		7		nC
		V _{DS} =-15V, I _D =-2A, V _{GS} =-4.5V		3.4		nC
Gate-Source Charge	Q _{gs}	V _{DS} =-15V, I _D =-2A V _{GS} =-10V		0.9		nC
Gate-Drain Charge	Q _{gd}			2.2		nC

STS3621

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ ^c	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS^b						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0\text{V}, I_s = 1.25\text{A}$	N-Ch	0.81	1.2	V
		$V_{GS} = 0\text{V}, I_s = -1.25\text{A}$	P-Ch	-0.8	-1.2	

Notes

- a. Surface Mounted on FR4 Board, $t \leq 10\text{sec}$.
 - b. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.
 - c. Guaranteed by design, not subject to production testing.
- N-Channel

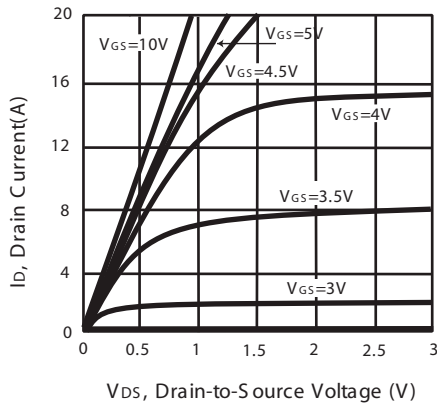


Figure 1. Output Characteristics

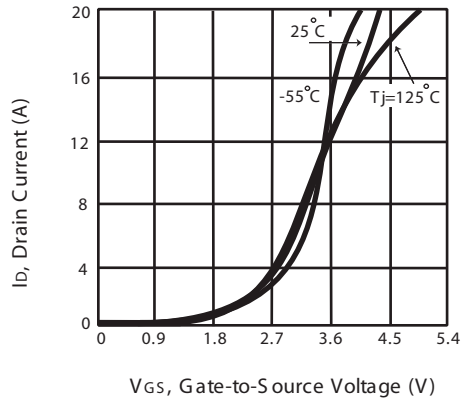


Figure 2. Transfer Characteristics

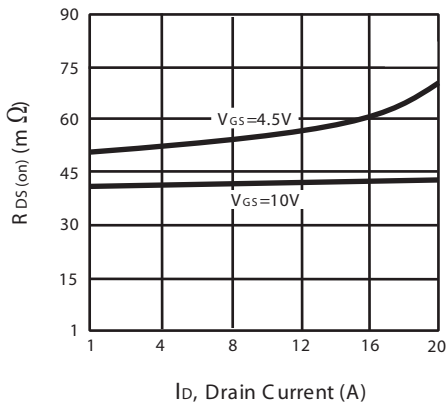


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

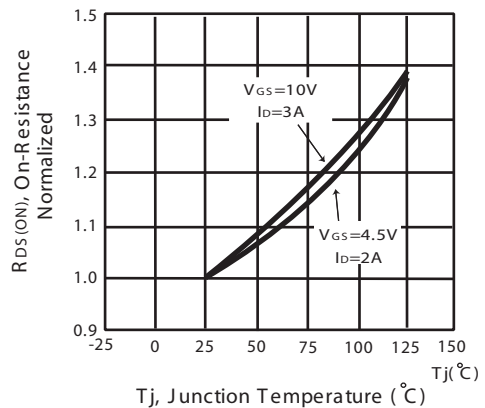


Figure 4. On-Resistance Variation with Drain Current and Temperature

STS 3621

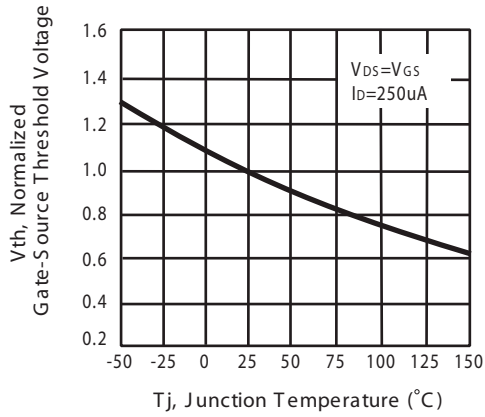


Figure 5. Gate Threshold Variation with Temperature

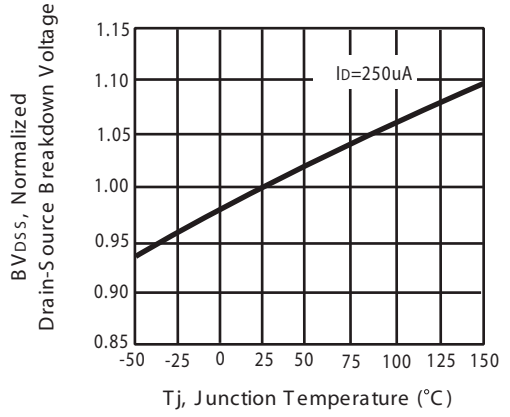


Figure 6. Breakdown Voltage Variation with Temperature

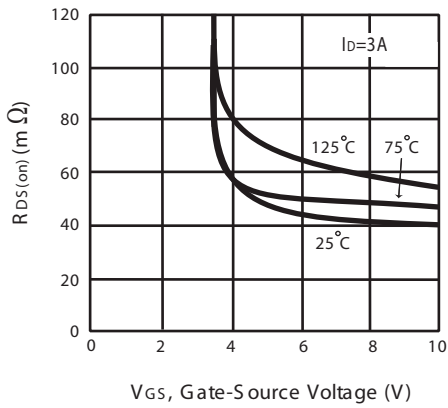


Figure 7. On-Resistance vs. Gate-Source Voltage

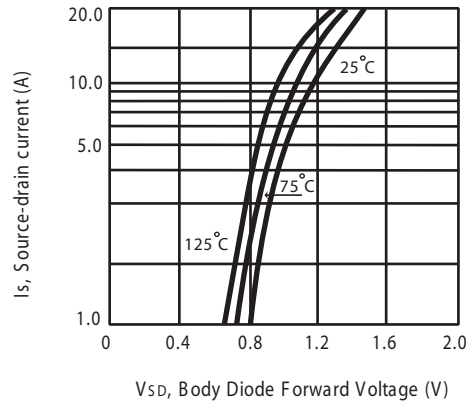


Figure 8. Body Diode Forward Voltage Variation with Source Current

STS 3621

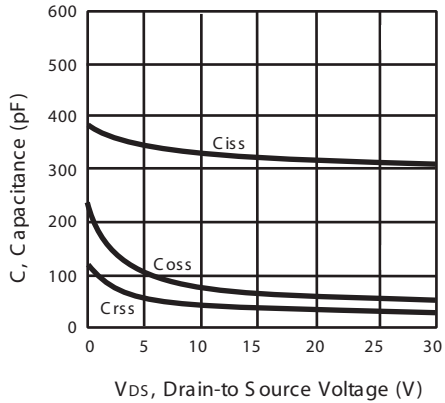


Figure 9. Capacitance

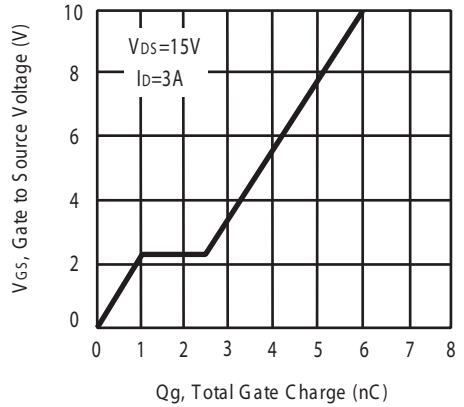


Figure 10. Gate Charge

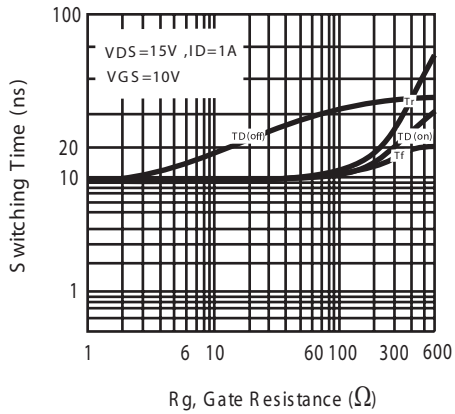


Figure 11. switching characteristics

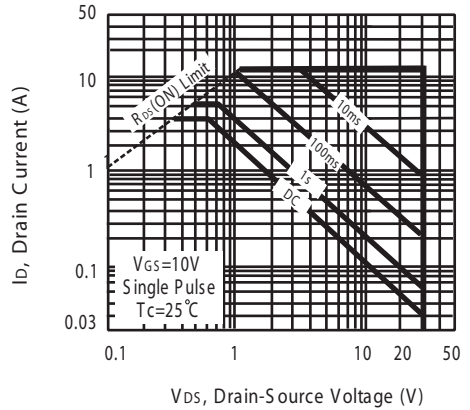
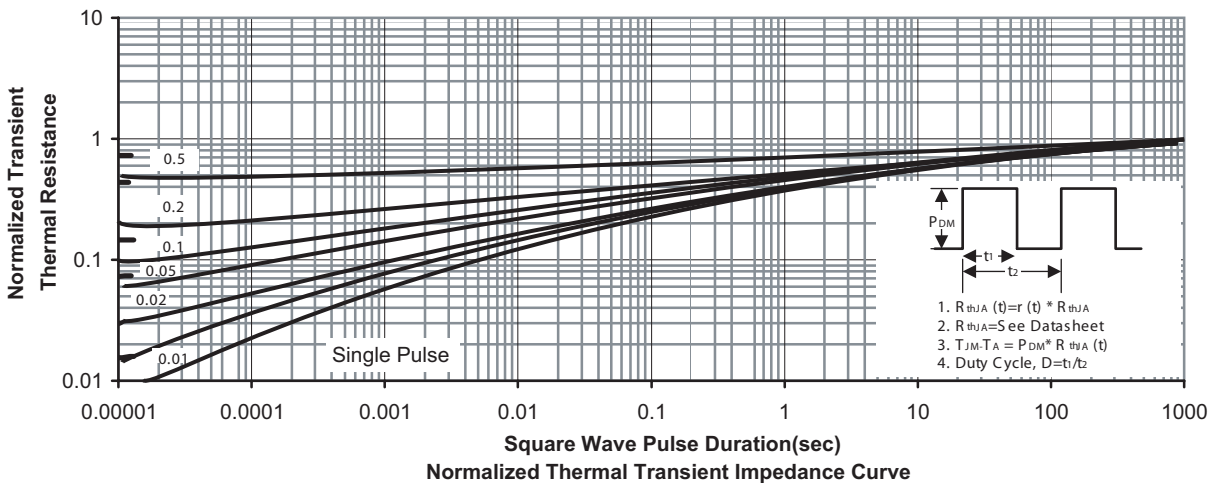


Figure 12. Maximum Safe Operating Area



STS3621

P-Channel

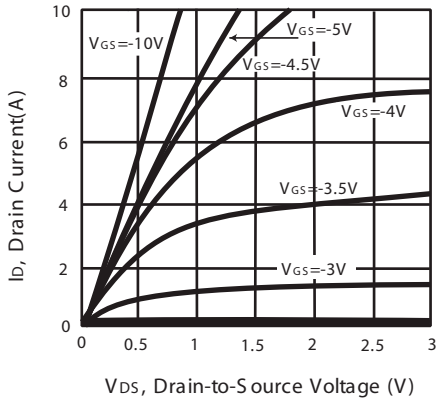


Figure 1. Output Characteristics

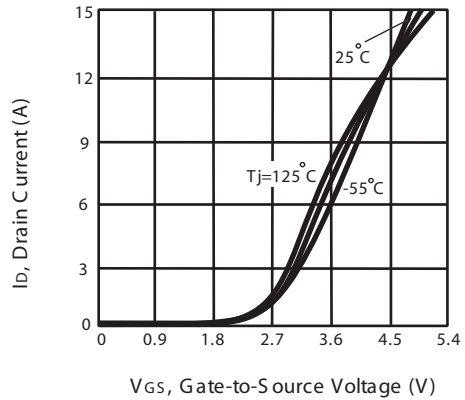


Figure 2. Transfer Characteristics

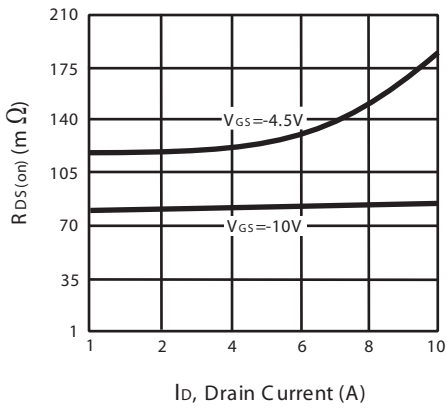


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

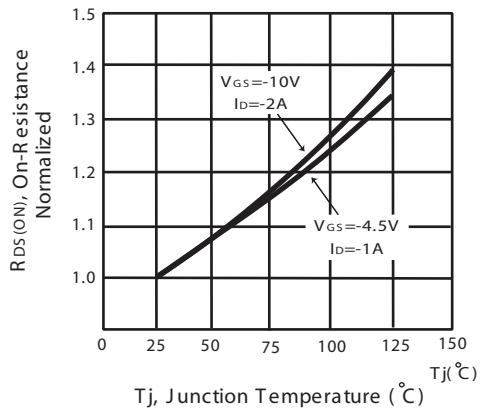


Figure 4. On-Resistance Variation with Drain Current and Temperature

STS 3621

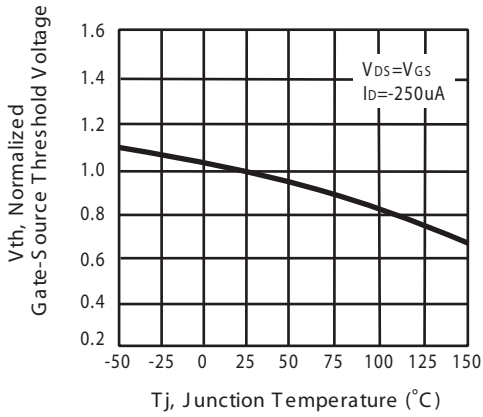


Figure 5. Gate Threshold Variation with Temperature

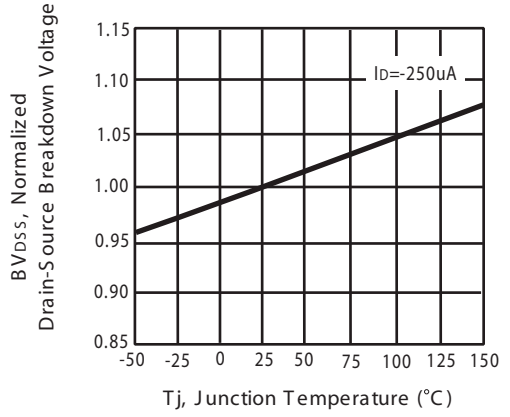


Figure 6. Breakdown Voltage Variation with Temperature

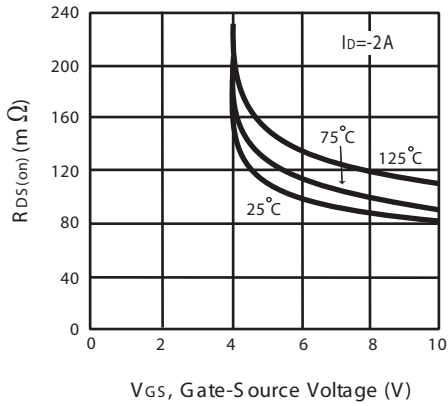


Figure 7. On-Resistance vs. Gate-Source Voltage

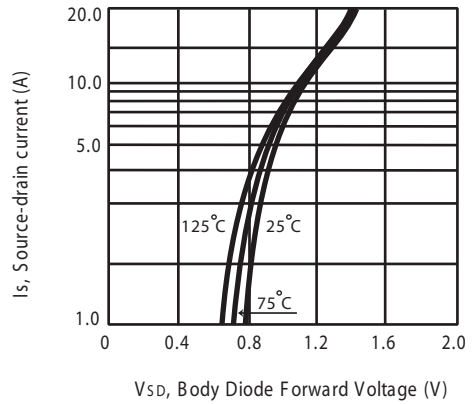


Figure 8. Body Diode Forward Voltage Variation with Source Current

STS 3621

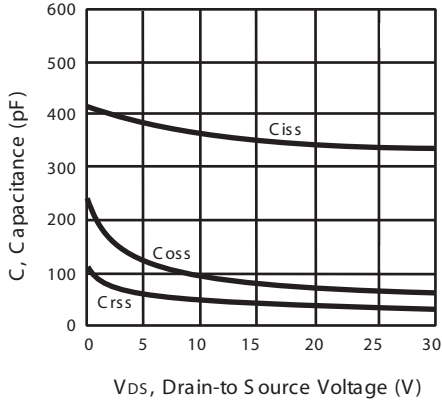


Figure 9. Capacitance

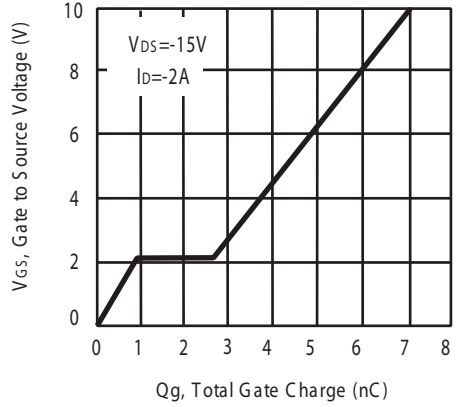


Figure 10. Gate Charge

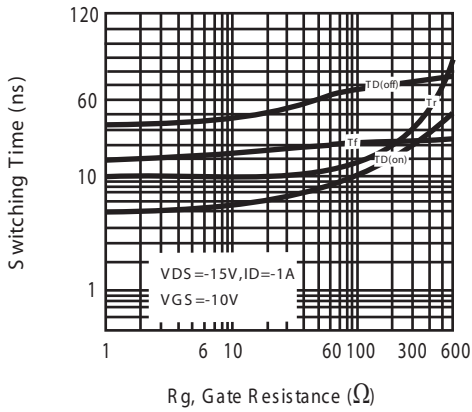


Figure 11. switching characteristics

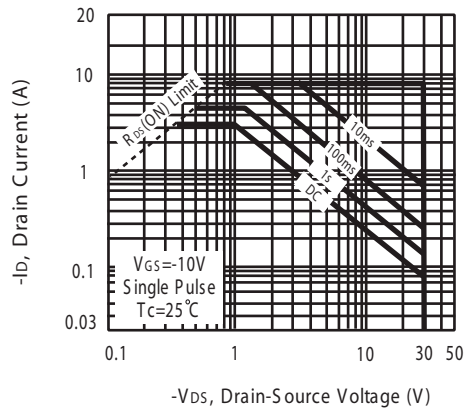
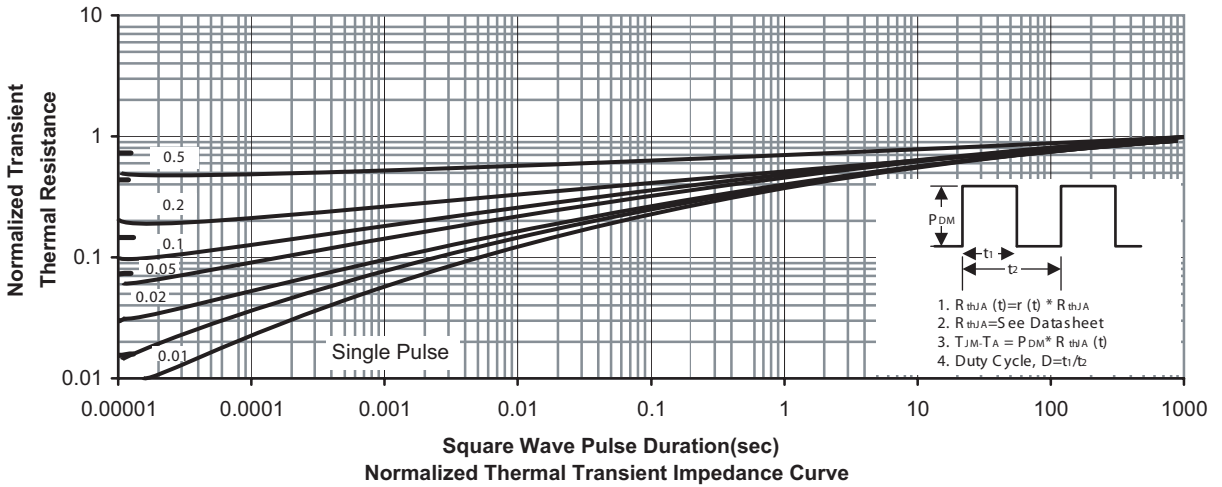


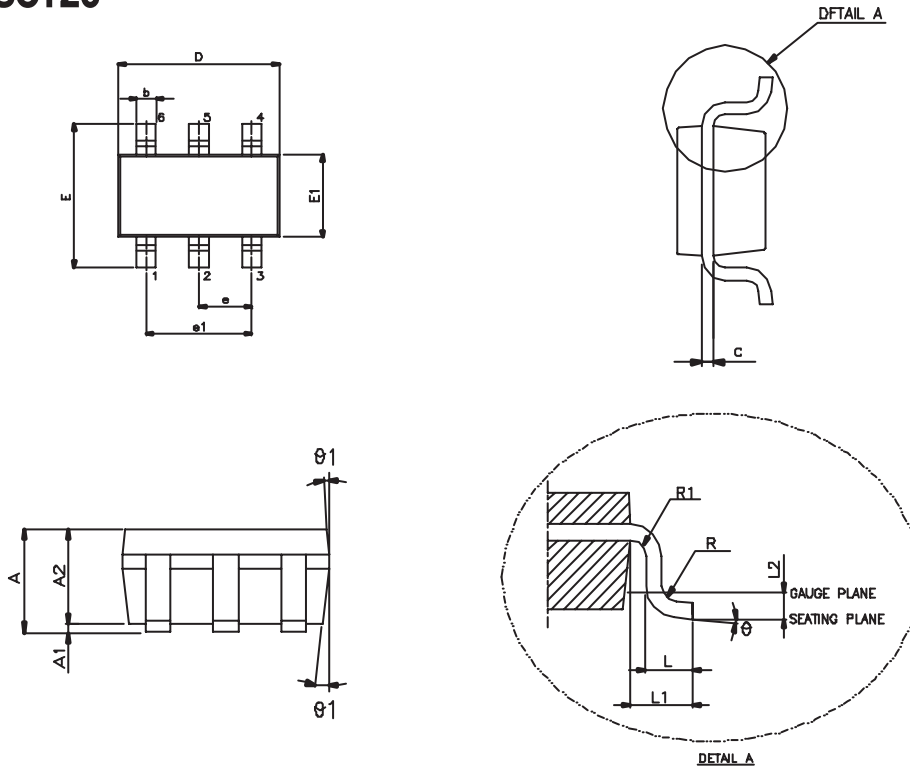
Figure 12. Maximum Safe Operating Area



STS 3621

PACKAGE OUTLINE DIMENSIONS

SOT26

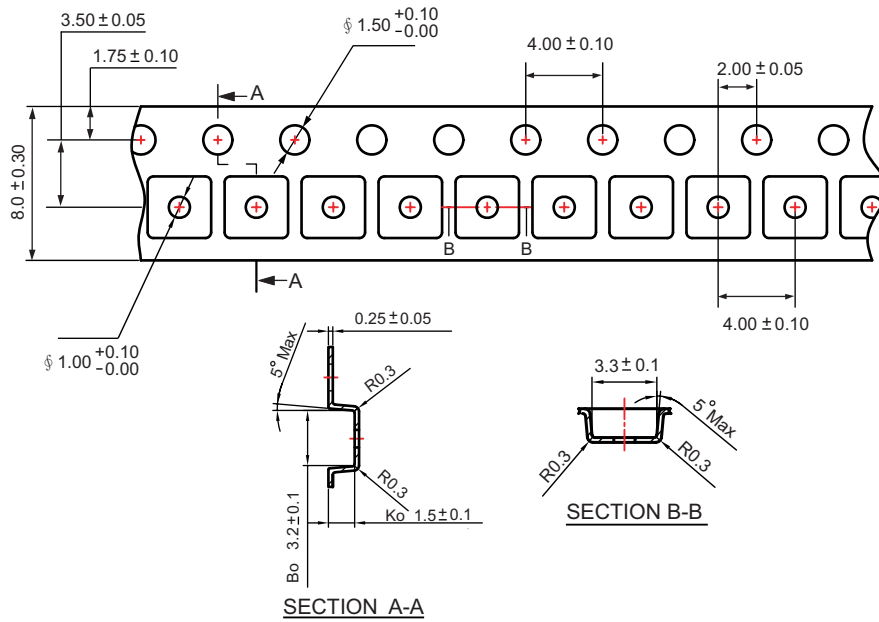


SYMBOL	MIN.	NOM.	MAX.
A	—	—	1.45
A1	—	—	0.15
A2	0.90	1.15	1.30
b	0.30	—	0.50
c	0.08	—	0.22
D	2.90 BSC.		
E	2.80 BSC.		
E1	1.60 BSC.		
e	0.95 BSC.		
e1	1.90 BSC.		
L	0.30	0.45	0.60
L1	0.60 REF.		
L2	0.25 BSC.		
R	0.10	—	—
R1	0.10	—	0.25
θ	0°	4°	8°
$\theta 1$	5°	10°	15°

STS 3621

SOT 26 Tape and Reel Data

SOT 26 Carrier Tape



SOT 26 Reel

