



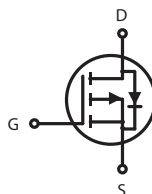
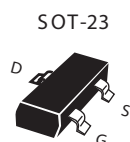
## P-Channel Enhancement Mode Field Effect Transistor

### PRODUCT SUMMARY

V <sub>DSS</sub>	I <sub>D</sub>	R <sub>DS(ON)</sub> (m $\Omega$ ) Max
-30V	-3A	100 @ V <sub>GS</sub> = -10V
		130 @ V <sub>GS</sub> = -4.5V

### FEATURES

- Super high dense cell design for low R<sub>DS(ON)</sub>.
- Rugged and reliable.
- SOT-23 Package.



### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V <sub>DS</sub>	- 30	V
Gate-Source Voltage	V <sub>GS</sub>	± 20	V
Drain Current-Continuous @ T <sub>J</sub> =25°C -Pulsed <sup>b</sup>	I <sub>D</sub>	- 3	A
	I <sub>DM</sub>	- 12	A
Drain-Source Diode Forward Current	I <sub>S</sub>	-1.25	A
Maximum Power Dissipation <sup>a</sup>	P <sub>D</sub>	1.25	W
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to 150	°C

### THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient <sup>a</sup>	R $\theta$ JA	100	°C/W
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# STS 3405

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

Parameter	Symbol	Condition	Min	Typ <sup>c</sup>	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	-30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-24V, V <sub>GS</sub> =0V			-1	uA
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> = 0V			±100	nA
ON CHARACTERISTICS <sup>b</sup>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> = -250uA	-1	-1.5	-3	V
Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> = -10V, I <sub>D</sub> =-3A		75	100	m-ohm
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -2A		100	130	m-ohm
On-State Drain Current	I <sub>D(ON)</sub>	V <sub>DS</sub> = -5V, V <sub>GS</sub> = -10V	8			A
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> = -5V, I <sub>D</sub> = - 3A		8		S
DYNAMIC CHARACTERISTICS <sup>c</sup>						
Input Capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =-15V, V <sub>GS</sub> = 0V f =1.0MHz		435		pF
Output Capacitance	C <sub>OSS</sub>			90		pF
Reverse Transfer Capacitance	C <sub>RSS</sub>			60		pF
SWITCHING CHARACTERISTICS <sup>c</sup>						
Turn-On Delay Time	t <sub>D(ON)</sub>	V <sub>DD</sub> = -15V, I <sub>D</sub> = -1A, V <sub>GEN</sub> = - 10V, R <sub>GEN</sub> = 6 ohm		8		ns
Rise Time	t <sub>r</sub>			6.8		ns
Turn-Off Delay Time	t <sub>D(OFF)</sub>			37		ns
Fall Time	t <sub>f</sub>			13		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-15V,I <sub>D</sub> =-3A,V <sub>GS</sub> =-10V		7.8		nC
Gate-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =-15V, I <sub>D</sub> = -3A, V <sub>GS</sub> =-10V		0.58		nC
Gate-Drain Charge	Q <sub>gd</sub>			2.2		nC

# STS3405

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS <sup>b</sup>						
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = -1.25A		-0.8	-1.25	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.

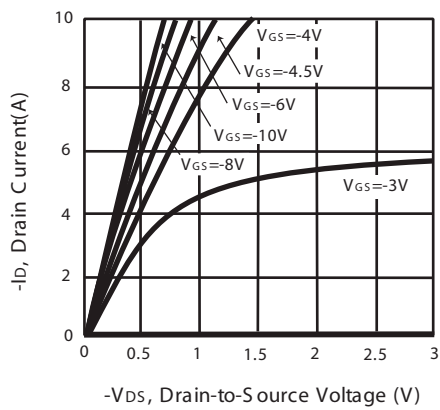


Figure 1. Output Characteristics

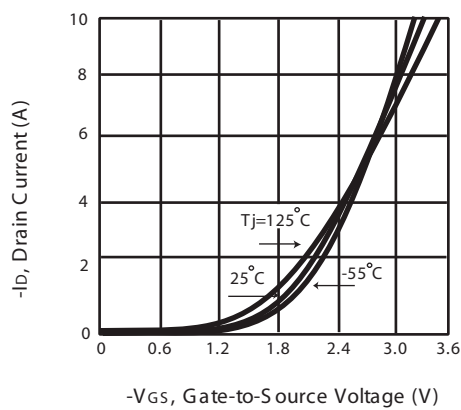


Figure 2. Transfer Characteristics

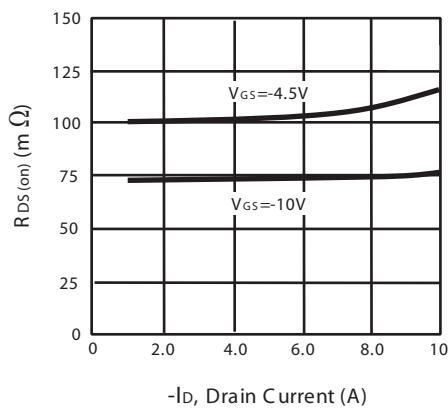


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

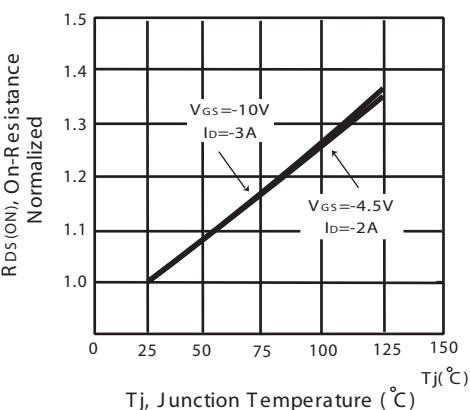


Figure 4. On-Resistance Variation with Drain Current and Temperature

# STS 3405

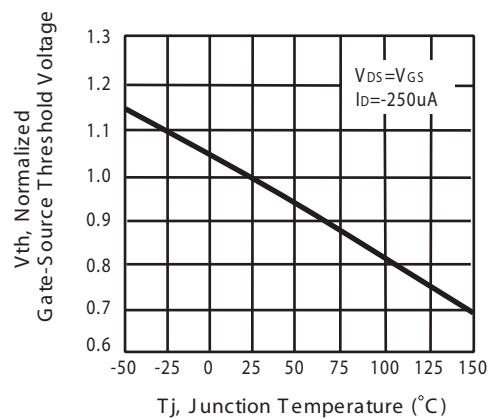


Figure 5. Gate Threshold Variation with Temperature

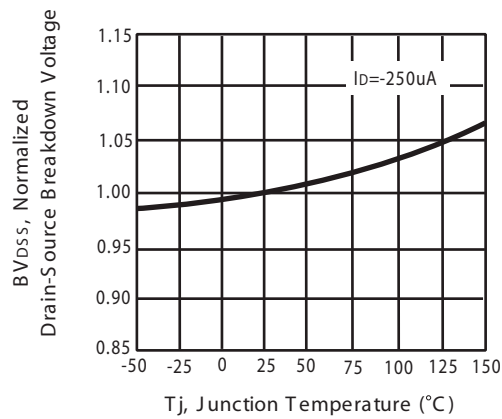


Figure 6. Breakdown Voltage Variation with Temperature

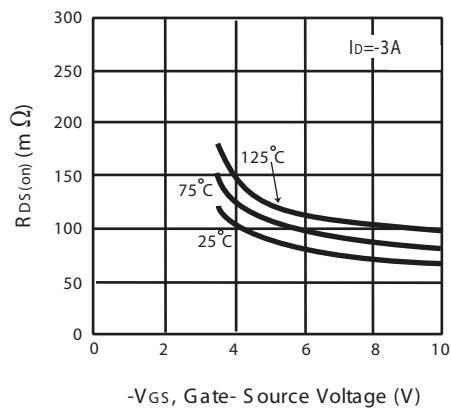


Figure 7. On-Resistance vs. Gate-Source Voltage

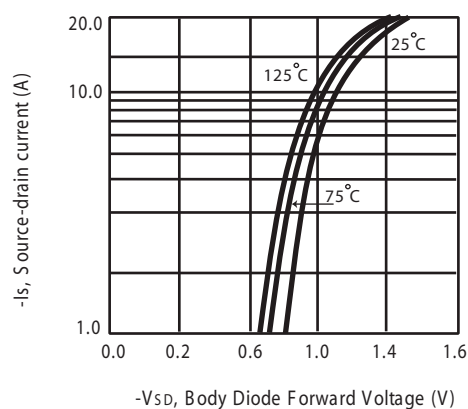


Figure 8. Body Diode Forward Voltage Variation with Source Current

# STS 3405

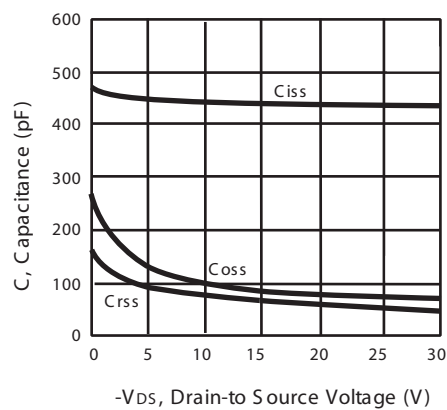


Figure 9. Capacitance

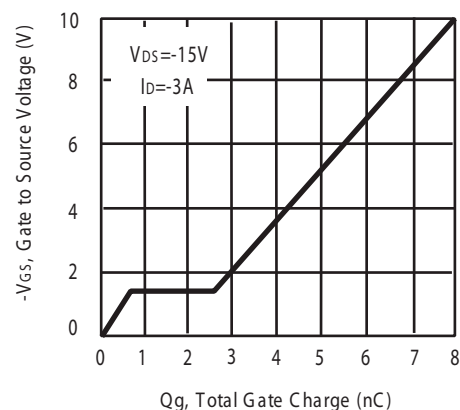


Figure 10. Gate Charge

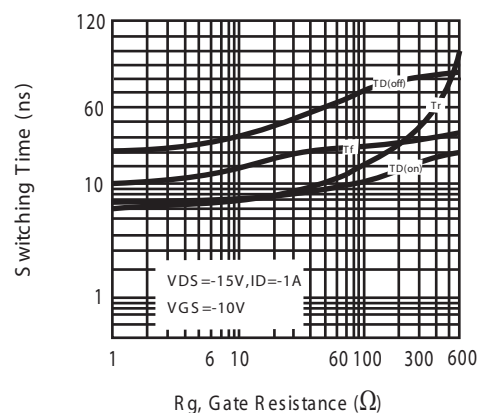


Figure 11. switching characteristics

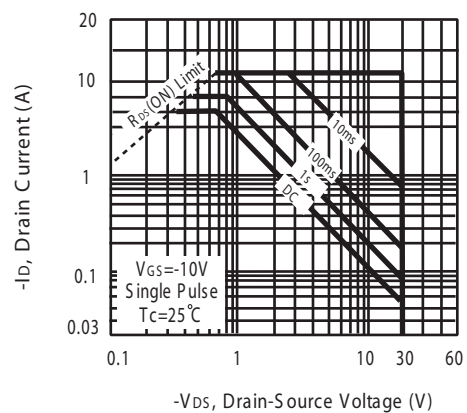


Figure 12. Maximum Safe Operating Area

# STS 3405

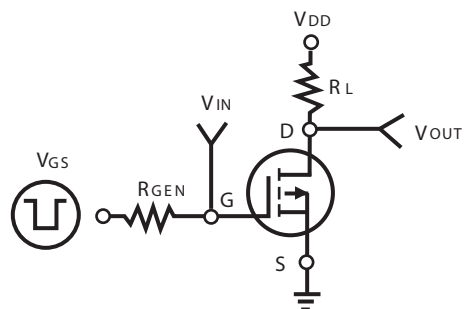


Figure 11. Switching Test Circuit

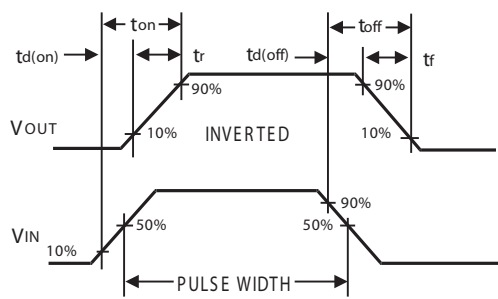
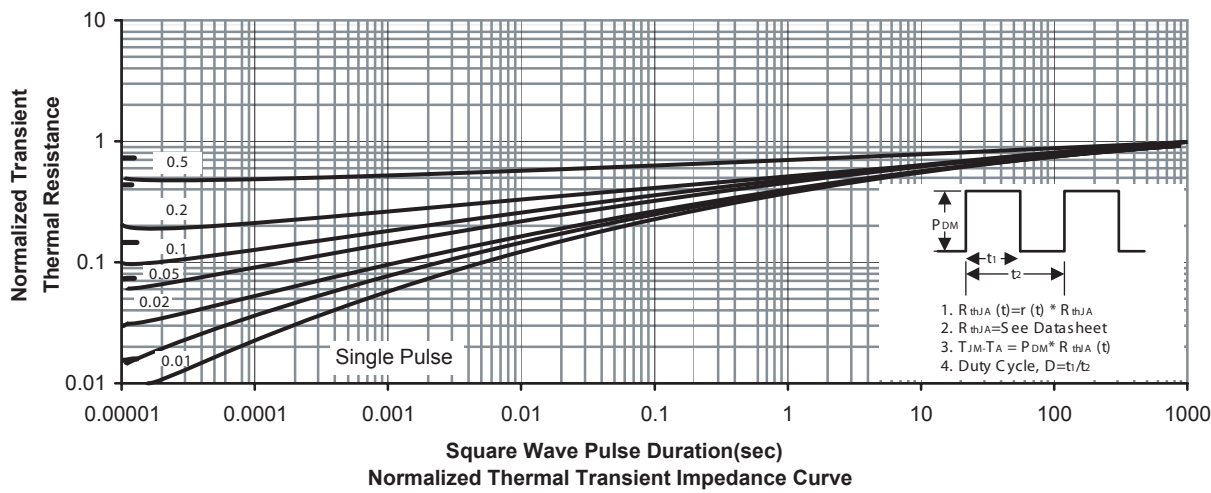


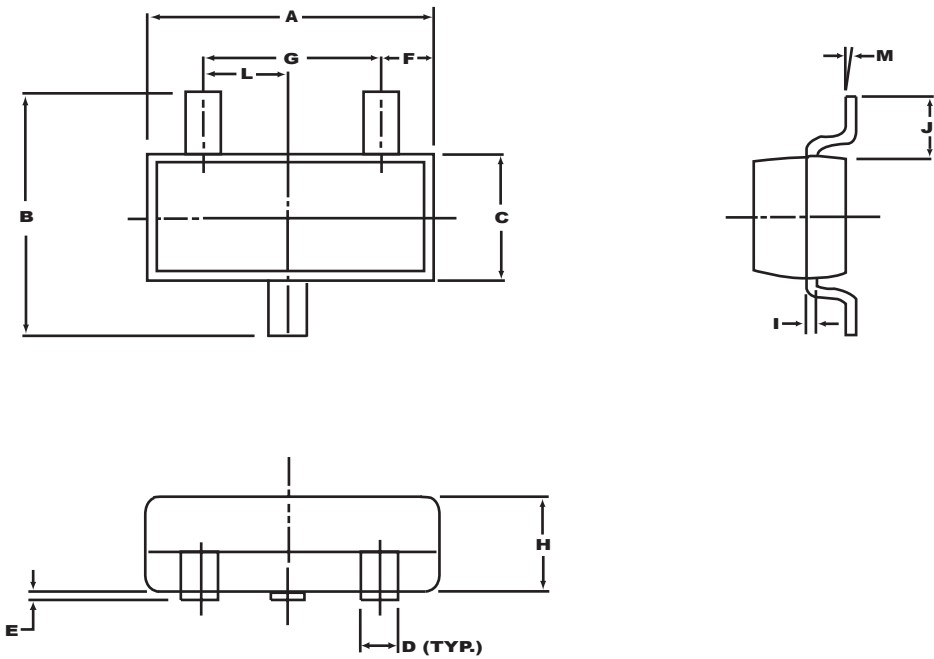
Figure 12. Switching Waveforms



# STS 3405

## PACKAGE OUTLINE DIMENSIONS

### SOT-23

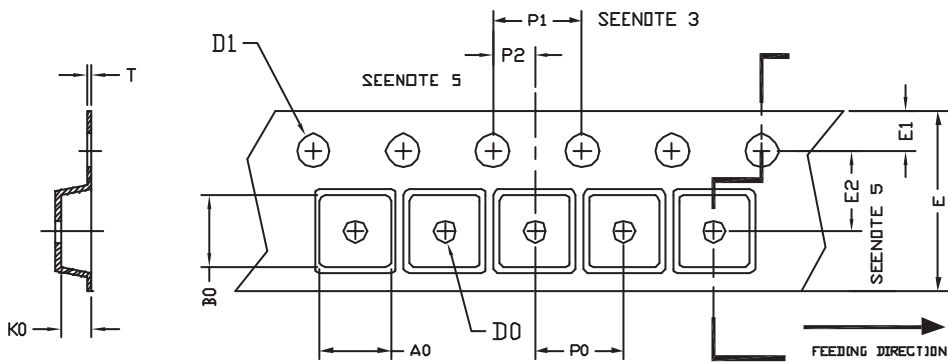


SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.70	3.10	0.106	0.122
B	2.40	2.80	0.094	0.110
C	1.40	1.60	0.055	0.063
D	0.35	0.50	0.014	0.020
E	0	0.10	0	0.004
F	0.45	0.55	0.018	0.022
G	1.90 REF.		0.075 REF.	
H	1.00	1.30	0.039	0.051
I	0.10	0.20	0.004	0.008
J	0.40	-	0.016	-
L	0.45	1.15	0.033	0.045
M	0°	10°	0°	10°

# STS 3405

## SOT-23 Tape and Reel Data

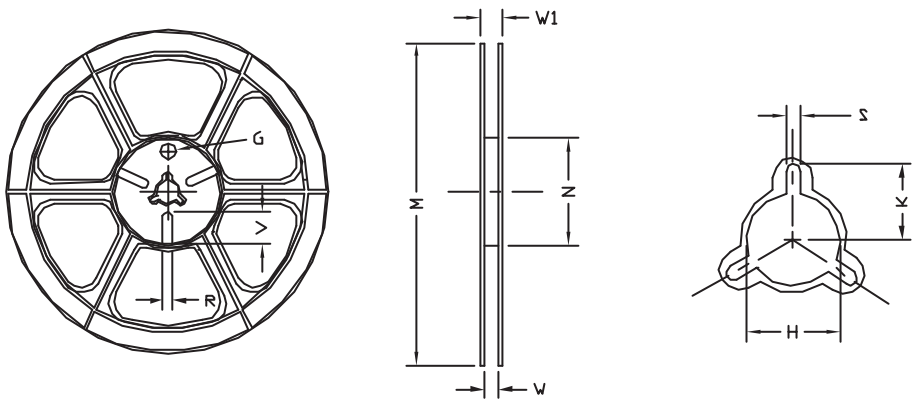
### SOT-23 Carrier Tape



UNIT:mm

PACKAGE	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
SOT-23	3.20 ±0.10	3.00 ±0.10	1.33 ±0.10	1.00 ±0.25	1.50 ±0.10	8.00 +0.30 -0.10	1.75 ±0.10	3.50 ±0.05	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	0.20 ±0.02

### SOT-23 Reel



UNIT:mm

TAPE SIZE	REEL SIZE	M	N	W	W1	H	K	S	G	R	V
8mm	178	178 ±1	60 ±1	9.00 ±0.5	12.00 ±0.5	13.5 ±0.5	10.5	2.00 ±0.5	10.0	5.00	18.00