



N-Channel Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

V _{DSS}	I _D	R _{DS(ON)} (mΩ) Max
30V	2A	174 @ V _{GS} =10V
		218 @ V _{GS} =4.5V
		311 @ V _{GS} =2.5V

FEATURES

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



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

Symbol	Parameter	Limit	Units	
V _{DS}	Drain-Source Voltage	30	V	
V _{GS}	Gate-Source Voltage	±12	V	
I _D	Drain Current-Continuous ^{a c}	T _A =25°C	2	A
		T _A =70°C	1.6	A
I _{DM}	-Pulsed ^c	7	A	
P _D	Maximum Power Dissipation ^a	T _A =25°C	1.25	W
		T _A =70°C	0.8	W
T _J , T _{STG}	Operating Junction and Storage Temperature Range	-55 to 150	°C	

THERMAL CHARACTERISTICS

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

STS3406

Ver 1.0

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	30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V , V _{GS} =0V			1	uA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±12V , V _{DS} =0V			±10	uA
ON CHARACTERISTICS						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	0.5	0.9	1.5	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V , I _D =1A		139	174	m ohm
		V _{GS} =4.5V , I _D =0.9A		164	218	m ohm
		V _{GS} =2.5V , I _D =0.8A		230	311	m ohm
g _{FS}	Forward Transconductance	V _{DS} =5V , I _D =1A		3.2		S
DYNAMIC CHARACTERISTICS ^b						
C _{ISS}	Input Capacitance	V _{DS} =15V, V _{GS} =0V f=1.0MHz		64		pF
C _{OSS}	Output Capacitance			26		pF
C _{RSS}	Reverse Transfer Capacitance			14		pF
SWITCHING CHARACTERISTICS ^b						
t _{D(ON)}	Turn-On Delay Time	V _{DD} =15V I _D =1A		6		ns
t _r	Rise Time			11.8		ns
t _{D(OFF)}	Turn-Off Delay Time	V _{GS} =10V R _{GEN} = 6 ohm		119		ns
t _f	Fall Time			19		ns
Q _g	Total Gate Charge	V _{DS} =15V, I _D =1A, V _{GS} =10V		1.9		nC
		V _{DS} =15V, I _D =1A, V _{GS} =4.5V		1.3		nC
Q _{gs}	Gate-Source Charge	V _{DS} =15V, I _D =1A, V _{GS} =10V		0.33		nC
Q _{gd}	Gate-Drain Charge			0.6		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S = 0.5A		0.82	1.2	V

Notes

- a. Surface Mounted on FR4 Board of 1 inch² , 1oz.
- b. Guaranteed by design, not subject to production testing.
- c. Drain current limited by maximum junction temperature.

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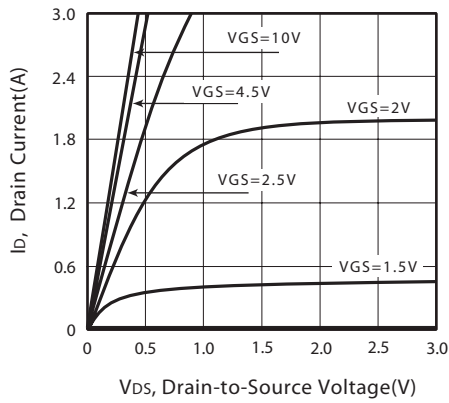


Figure 1. Output Characteristics

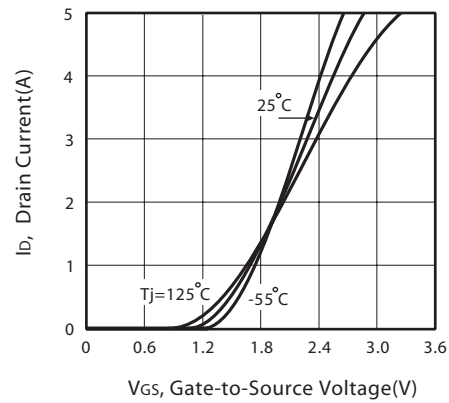


Figure 2. Transfer Characteristics

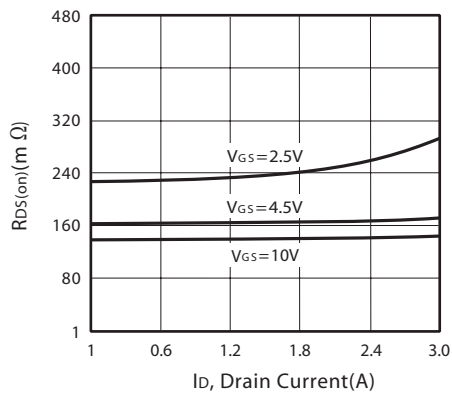


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

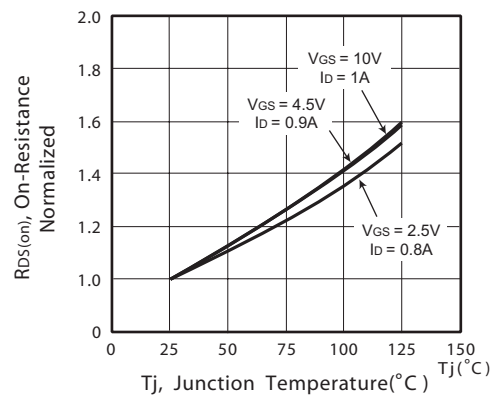


Figure 4. On-Resistance Variation with Drain Current and Temperature

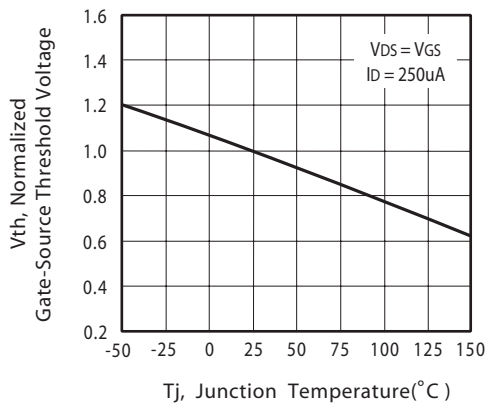


Figure 5. Gate Threshold Variation with Temperature

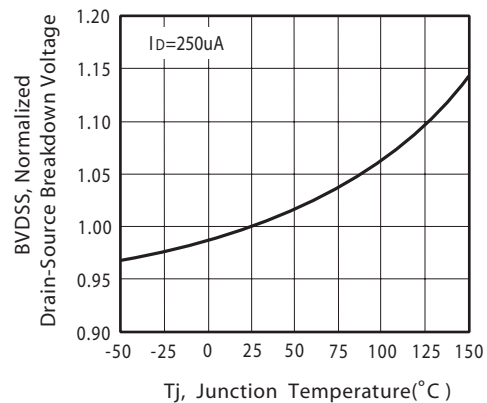


Figure 6. Breakdown Voltage Variation with Temperature

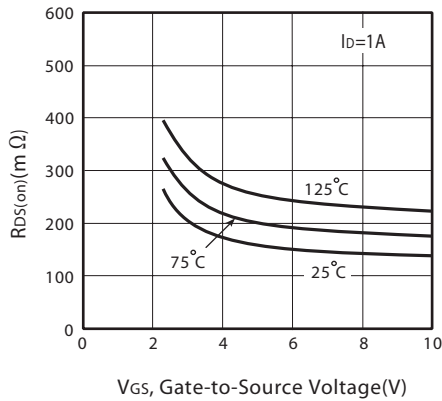


Figure 7. On-Resistance vs. Gate-Source Voltage

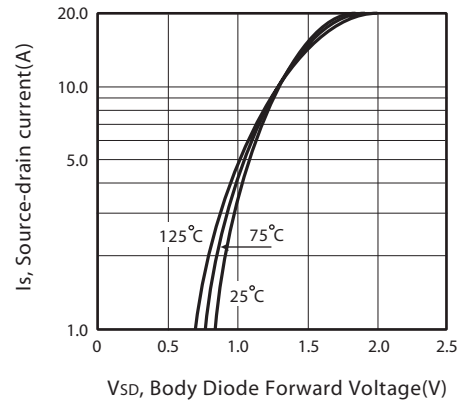


Figure 8. Body Diode Forward Voltage Variation with Source Current

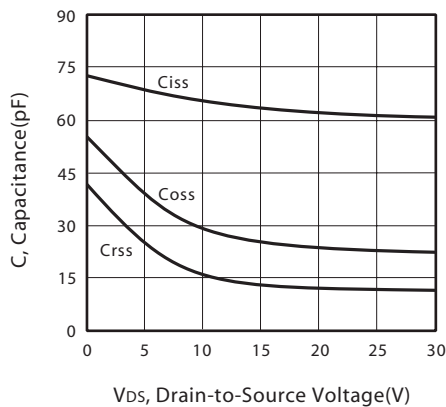


Figure 9. Capacitance

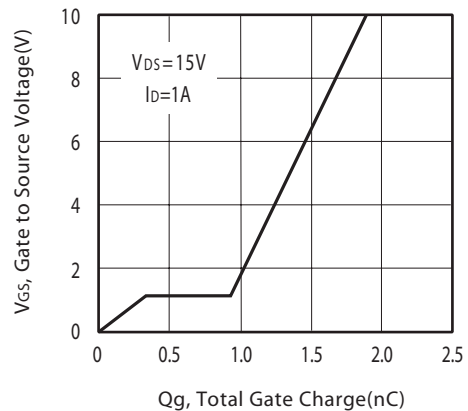


Figure 10. Gate Charge

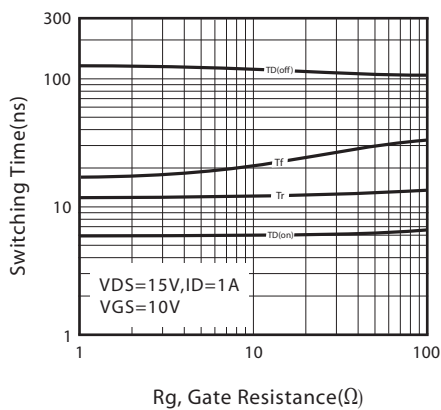


Figure 11. switching characteristics

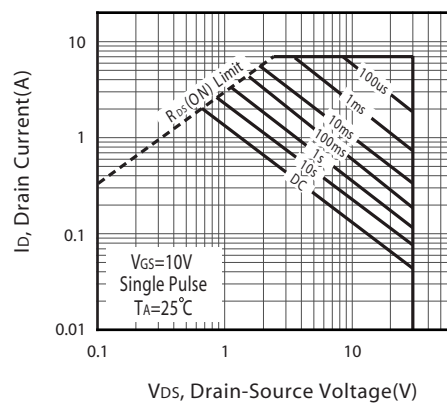


Figure 12. Maximum Safe Operating Area

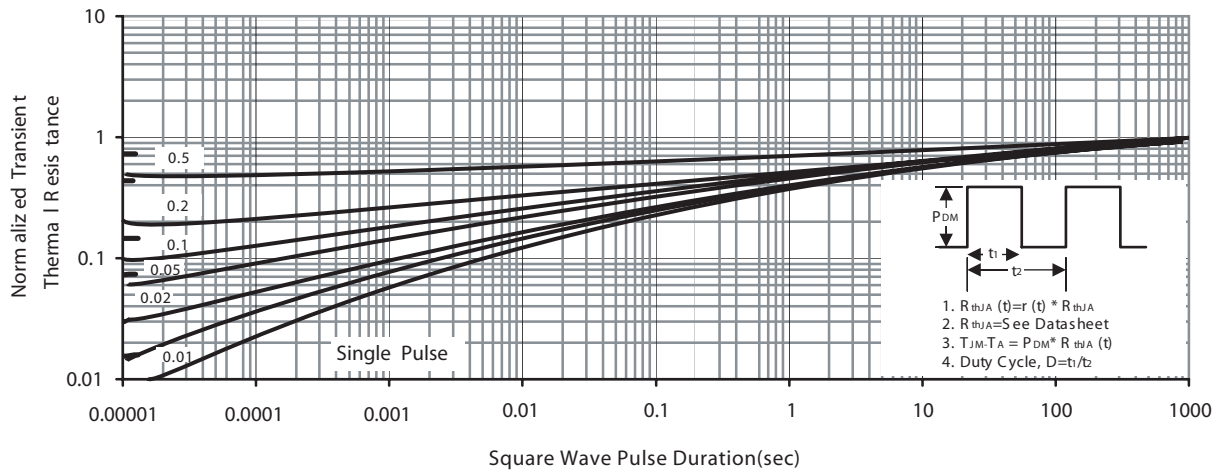
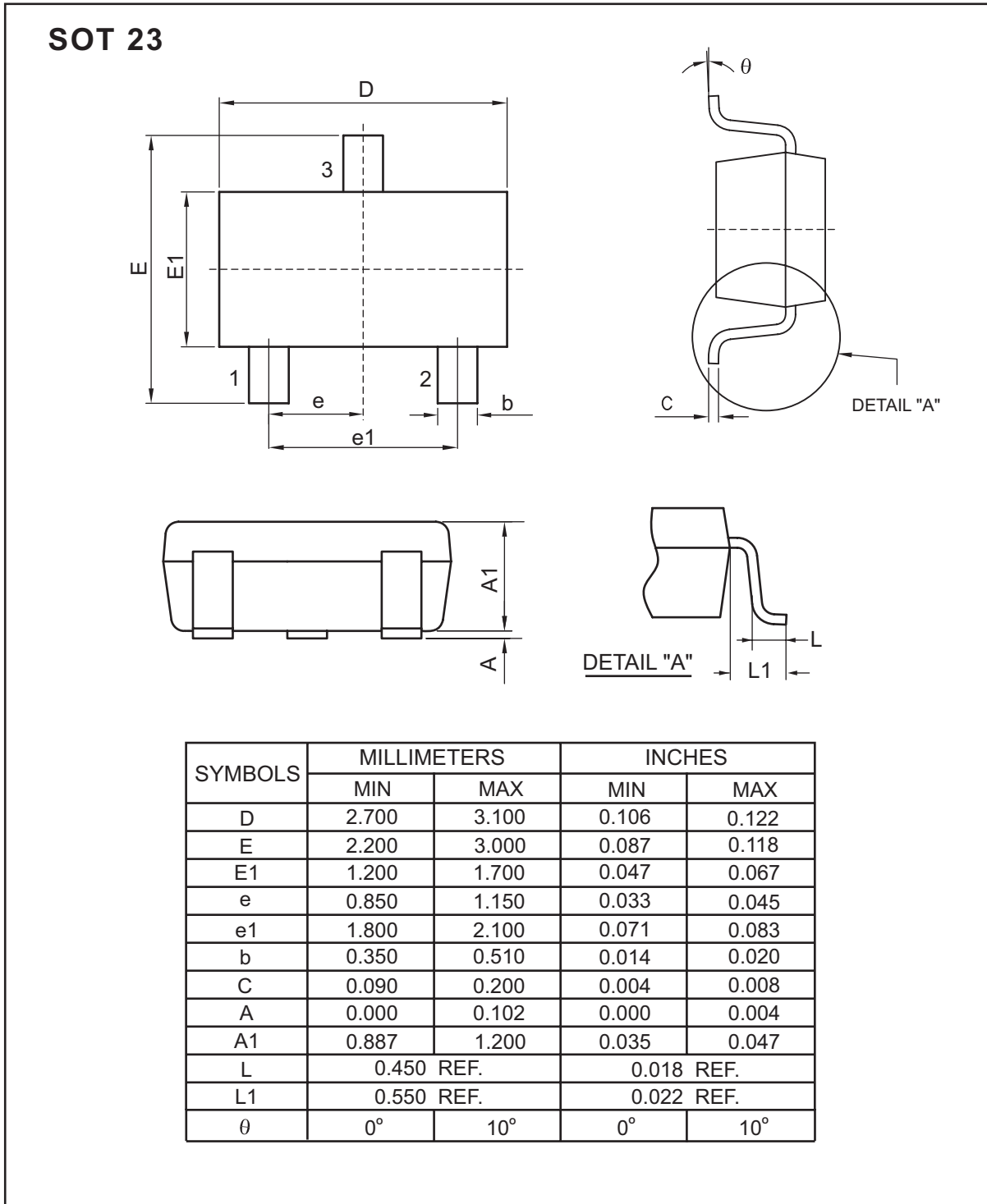


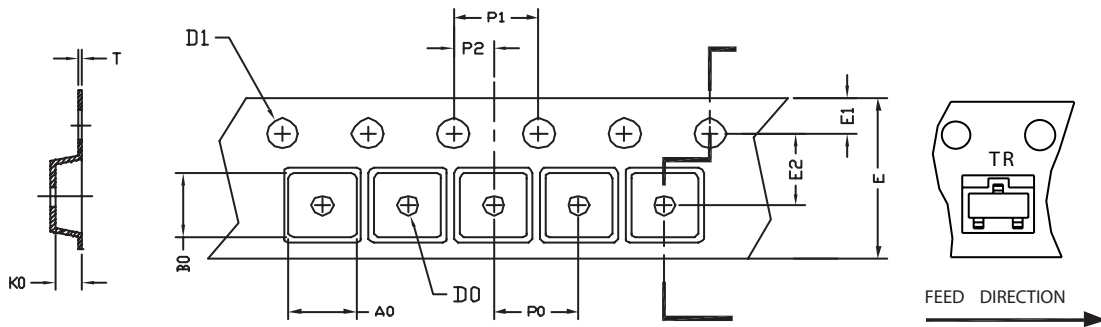
Figure 14. Normalized Thermal Transient Impedance Curve

PACKAGE OUTLINE DIMENSIONS



SOT-23 Tape and Reel Data

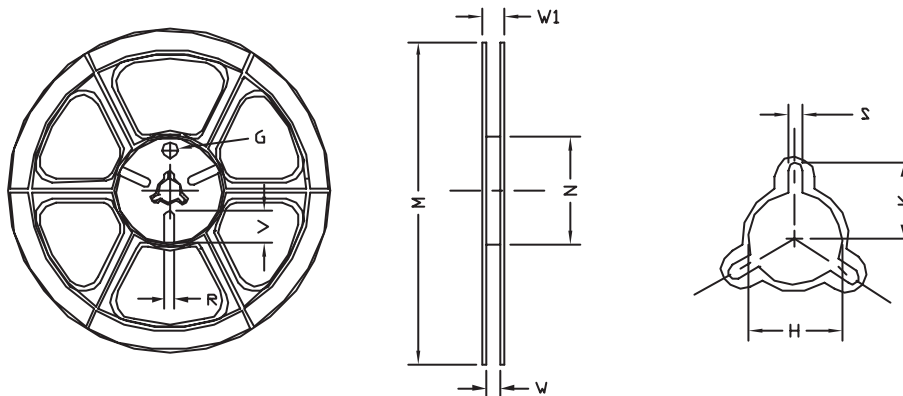
SOT-23 Carrier Tape



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	$\phi 1.00$ $+0.25$	$\phi 1.50$ $+0.10$	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	$\phi 178$	$\phi 178$ ± 1	$\phi 60$ ± 1	9.00 ± 0.5	12.00 ± 0.5	$\phi 13.5$ ± 0.5	10.5	2.00 ± 0.5	$\phi 10.0$	5.00	18.00

TOP MARKING DEFINITION

