



N-Channel Enhancement Mode Field Effect Transistor

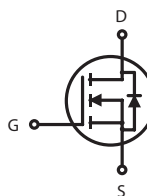
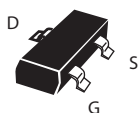
PRODUCT SUMMARY

VDSS	ID	RDS(ON) (mΩ) Max
60V	3A	83 @ VGS= 10V
		107 @ VGS= 4.5V

FEATURES

- Super high dense cell design for low RDS(ON).
- Rugged and reliable.
- Surface Mount Package.

SOT23



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

Symbol	Parameter	Limit	Units
VDS	Drain-Source Voltage	60	V
VGS	Gate-Source Voltage	±20	V
ID	Drain Current-Continuous ^a	TC=25°C 3 TC=70°C 2.4	A A
IDM	-Pulsed ^b	11.4	A
EAS	Single Pulse Avalanche Energy ^d	23	mJ
PD	Maximum Power Dissipation ^a	TC=25°C 1.25 TC=70°C 0.8	W W
TJ, TSTG	Operating Junction and Storage Temperature Range	-55 to 150	°C

THERMAL CHARACTERISTICS

RθJA	Thermal Resistance, Junction-to-Ambient ^a	100	°C/W
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STS6308

Ver 1.0

ELECTRICAL CHARACTERISTICS (T_A=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	60			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =48V , 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	1.8	3	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V , I _D =3A		66	83	m ohm
		V _{GS} =4.5V , I _D =2.6A		79	107	m ohm
g _{FS}	Forward Transconductance	V _{DS} =5V , I _D =3A		7.5		S
DYNAMIC CHARACTERISTICS °						
C _{ISS}	Input Capacitance	V _{DS} =25V,V _{GS} =0V f=1.0MHz		950		pF
C _{OSS}	Output Capacitance			52		pF
C _{RSS}	Reverse Transfer Capacitance			40		pF
SWITCHING CHARACTERISTICS °						
t _{D(ON)}	Turn-On Delay Time	V _{DD} =30V I _D =1A V _{GS} =10V R _{GEN} = 6 ohm		15.7		ns
t _r	Rise Time			12		ns
t _{D(OFF)}	Turn-Off Delay Time			21		ns
t _f	Fall Time			18.5		ns
Q _g	Total Gate Charge	V _{DS} =30V,I _D =3A,V _{GS} =10V		15		nC
		V _{DS} =30V,I _D =3A,V _{GS} =4.5V		7		nC
Q _{gs}	Gate-Source Charge	V _{DS} =30V,I _D =3A,		1.8		nC
Q _{gd}	Gate-Drain Charge	V _{GS} =10V		3.5		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
V _{SD}	Diode Forward Voltage	V _{GS} =0V,I _S = 1A		0.795	1.2	V

Notes

- Surface Mounted on FR4 Board, t ≤ 10sec.
- Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.
- Starting T_J=25°C, L=0.5mH, V_{DD} = 30V. (See Figure13)

Jul,15,2010

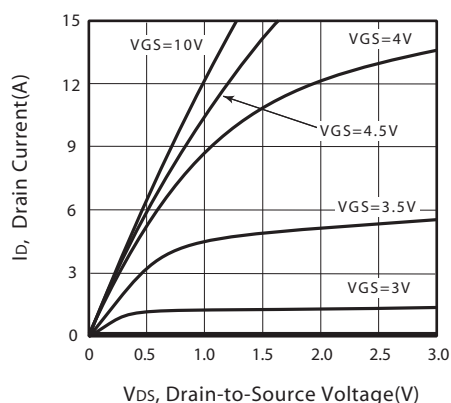


Figure 1. Output Characteristics

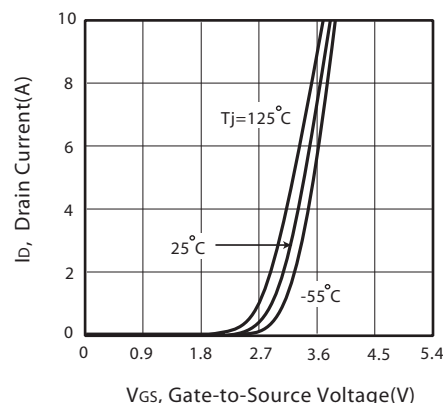


Figure 2. Transfer Characteristics

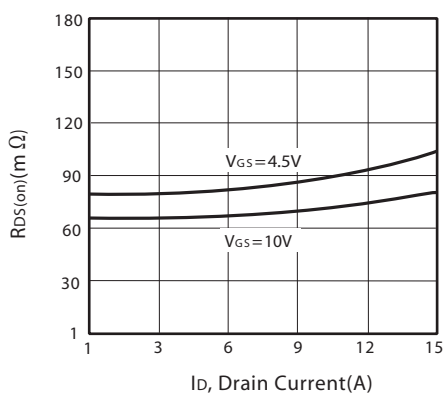


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

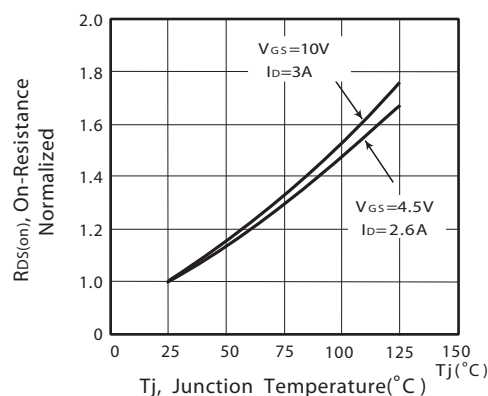


Figure 4. On-Resistance Variation with Drain Current and Temperature

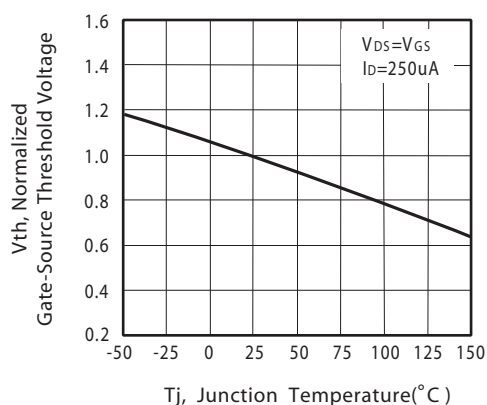


Figure 5. Gate Threshold Variation with Temperature

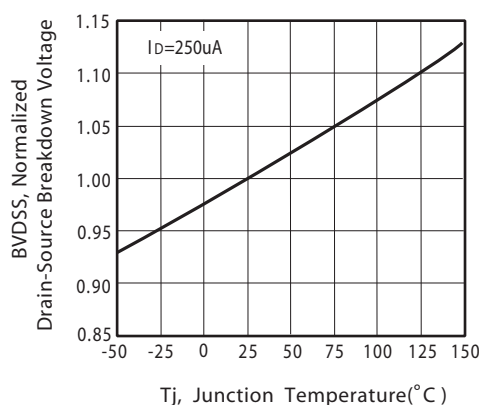


Figure 6. Breakdown Voltage Variation with Temperature

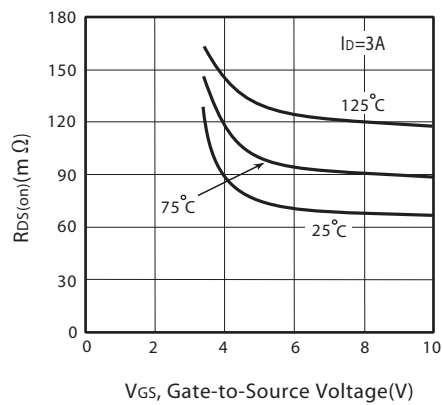


Figure 7. On-Resistance vs. Gate-Source Voltage

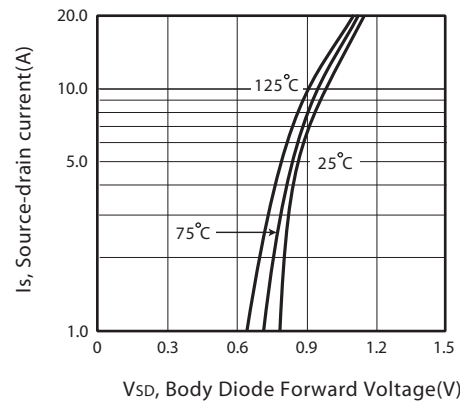


Figure 8. Body Diode Forward Voltage Variation with Source Current

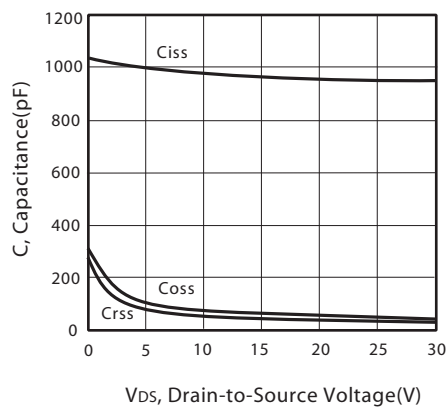


Figure 9. Capacitance

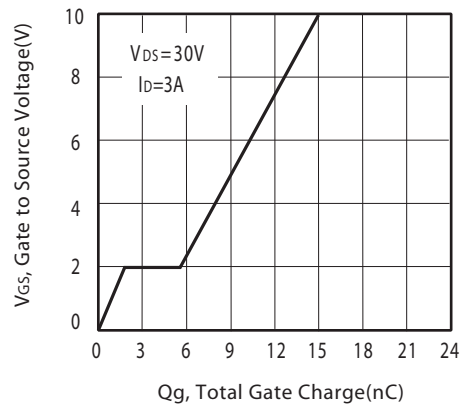


Figure 10. Gate Charge

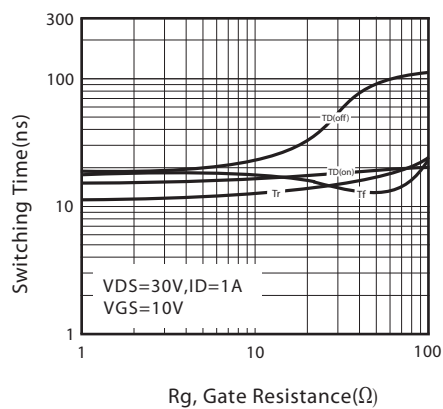


Figure 11. switching characteristics

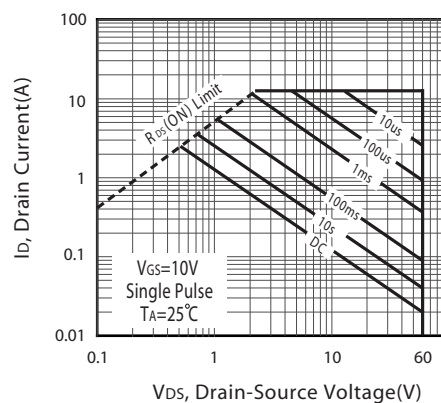
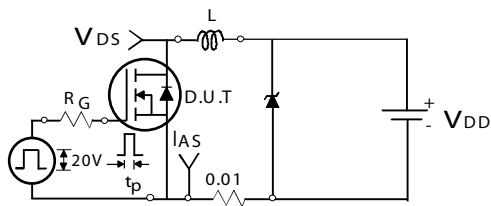
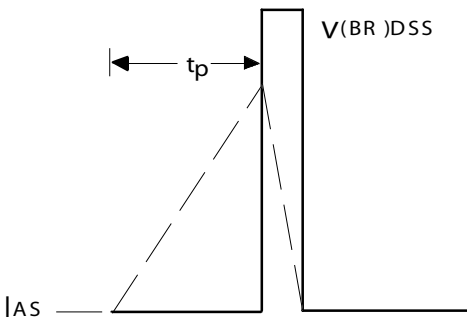


Figure 12. Maximum Safe Operating Area



Unclamped Inductive Test Circuit

Figure 13a.



Unclamped Inductive Waveforms

Figure 13b.

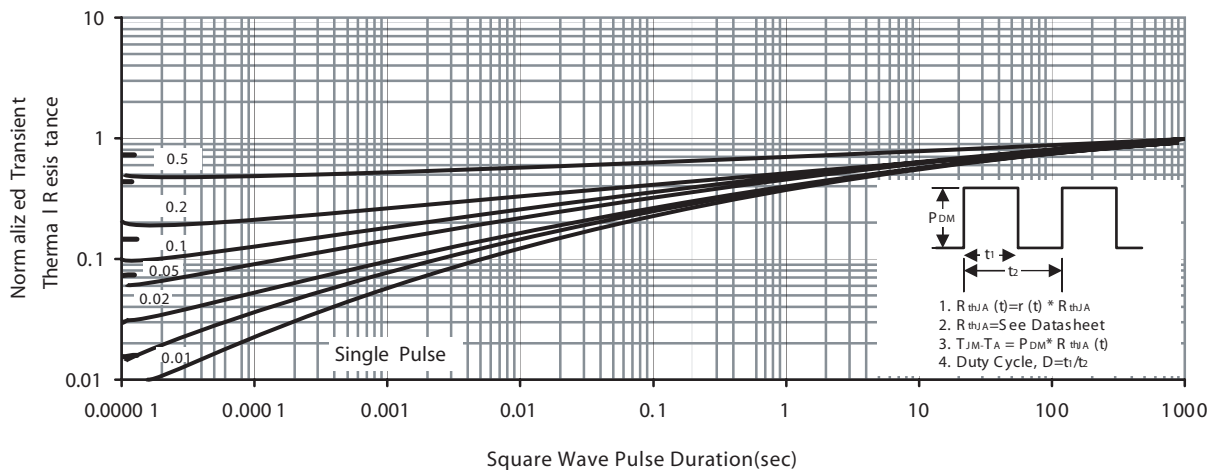
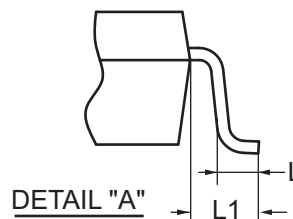
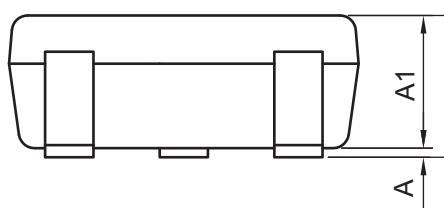
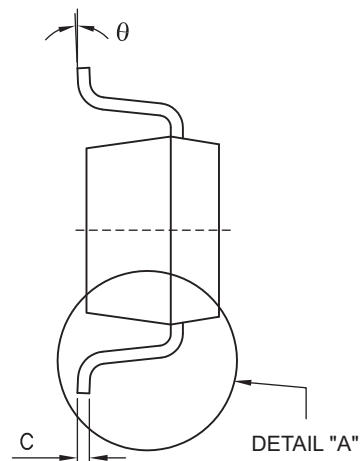
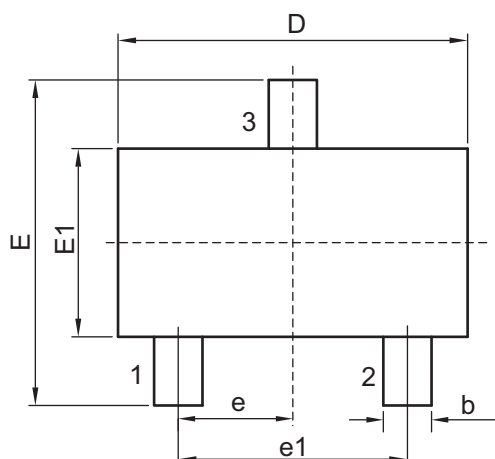


Figure 14. Normalized Thermal Transient Impedance Curve

PACKAGE OUTLINE DIMENSIONS

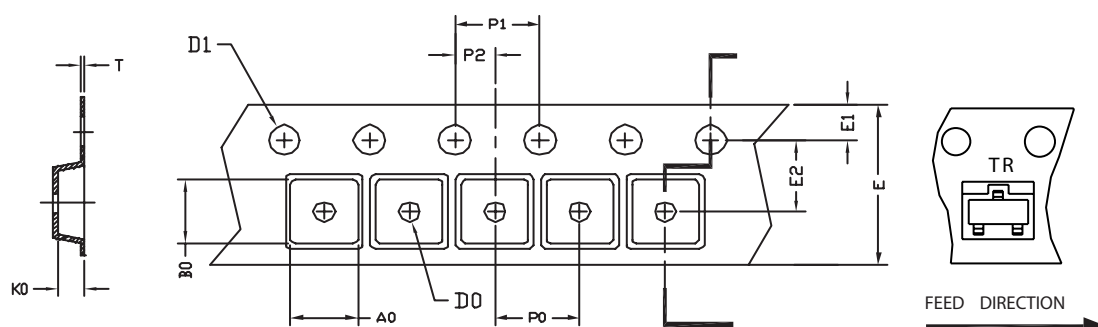
SOT 23



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
D	2.700	3.100	0.106	0.122
E	2.200	3.000	0.087	0.118
E1	1.200	1.700	0.047	0.067
e	0.850	1.150	0.033	0.045
e1	1.800	2.100	0.071	0.083
b	0.350	0.510	0.014	0.020
C	0.090	0.200	0.004	0.008
A	0.000	0.102	0.000	0.004
A1	0.887	1.200	0.035	0.047
L	0.450 REF.		0.018 REF.	
L1	0.550 REF.		0.022 REF.	
θ	0°	10°	0°	10°

SOT-23 Tape and Reel Data

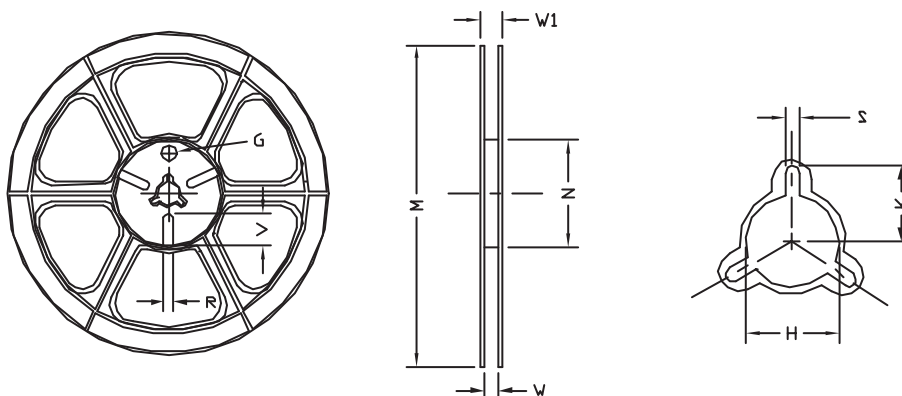
SOT-23 Carrier Tape



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