



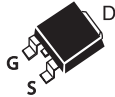
N-Channel Logic Level Enhancement Mode Field Effect Transistor

PRODUCT SUMMARY

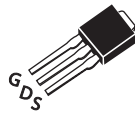
V _{DSS}	I _D	R _{DS(ON)} (Ω) Typ
200V	4A	1.4 @ V _{GS} =10V
		1.6 @ V _{GS} =4.5V

FEATURES

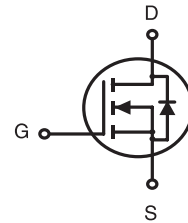
- Super high dense cell design for low R_{DS(ON)}.
- Rugged and reliable.
- TO-252 and TO-251 Package.



STU SERIES
TO-252AA(D-PAK)



STD SERIES
TO-251(I-PAK)



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

Symbol	Parameter	Limit	Units
V _{DS}	Drain-Source Voltage	200	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Drain Current-Continuous	T _C =25°C	4
		T _C =70°C	3.3
I _{DM}	-Pulsed ^a	11	A
P _D	Maximum Power Dissipation	T _C =25°C	50
		T _C =70°C	35
T _J , T _{STG}	Operating Junction and Storage Temperature Range	-55 to 175	°C

THERMAL CHARACTERISTICS

R _{θJC}	Thermal Resistance, Junction-to-Case	3	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient	50	°C/W

STU/D04N20

Ver 1.0

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	200			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =160V , 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	2.5	V
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} =10V , I _D =2A		1.4	1.8	ohm
		V _{GS} =4.5V , I _D =2A		1.6	2.0	ohm
g _{FS}	Forward Transconductance	V _{DS} =10V , I _D =2A		7.5		S
DYNAMIC CHARACTERISTICS ^b						
C _{ISS}	Input Capacitance	V _{DS} =25V,V _{GS} =0V f=1.0MHz		385		pF
C _{OSS}	Output Capacitance			21		pF
C _{RSS}	Reverse Transfer Capacitance			12		pF
SWITCHING CHARACTERISTICS ^b						
t _{D(ON)}	Turn-On Delay Time	V _{DD} =100V I _D =1A V _{GS} =10V R _{GEN} = 6 ohm		8.3		ns
t _r	Rise Time			10		ns
t _{D(OFF)}	Turn-Off Delay Time			20		ns
t _f	Fall Time			4.5		ns
Q _g	Total Gate Charge	V _{DS} =100V,I _D =1A,V _{GS} =10V		5.7		nC
		V _{DS} =100V,I _D =1A,V _{GS} =4.5V		3		nC
Q _{gs}	Gate-Source Charge	V _{DS} =100V,I _D =1A,		0.9		nC
Q _{gd}	Gate-Drain Charge	V _{GS} =10V		1.2		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
V _{SD}	Diode Forward Voltage	V _{GS} =0V,I _S =0.5A		0.81	1.3	V
Notes						
a.Pulse Test:Pulse Width ≤ 300us, Duty Cycle ≤ 2%.						
b.Guaranteed by design, not subject to production testing.						

Oct,26,2012

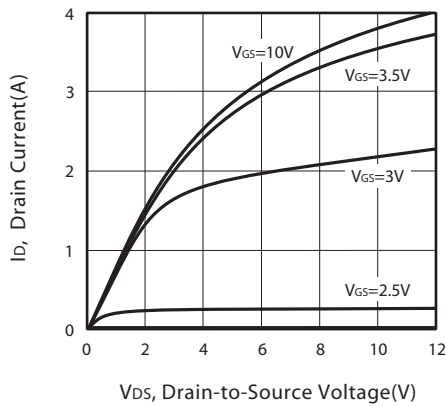


Figure 1. Output Characteristics

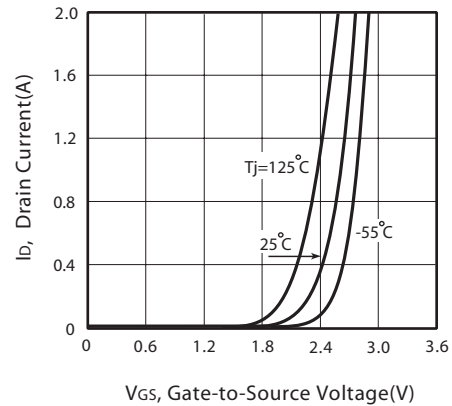


Figure 2. Transfer Characteristics

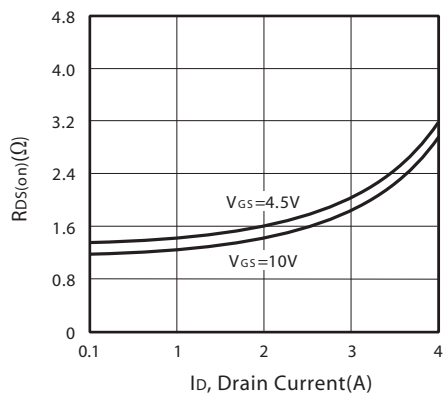


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

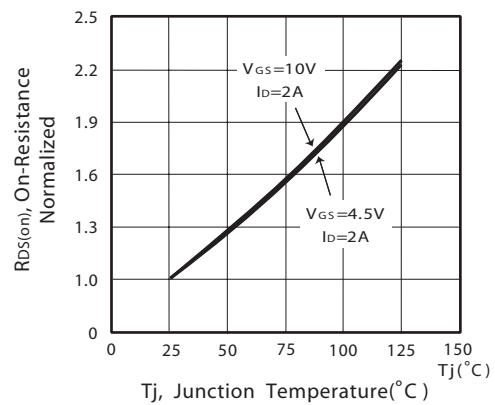


Figure 4. On-Resistance Variation with Drain Current and Temperature

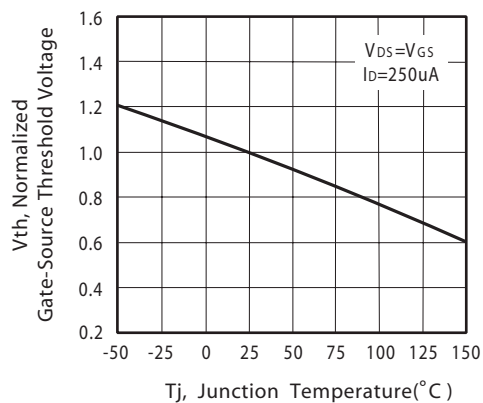


Figure 5. Gate Threshold Variation with Temperature

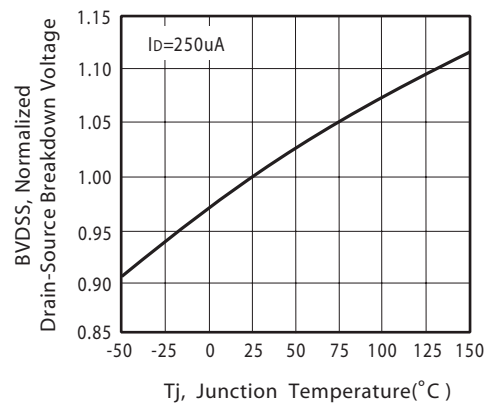


Figure 6. Breakdown Voltage Variation with Temperature

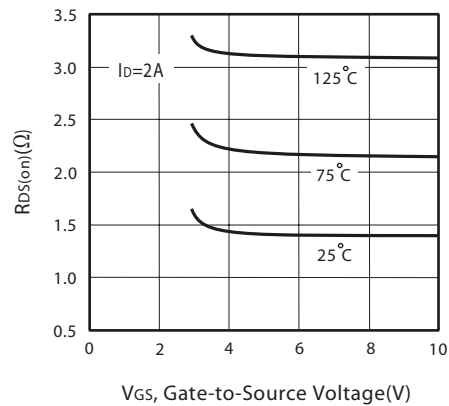


Figure 7. On-Resistance vs. Gate-Source Voltage

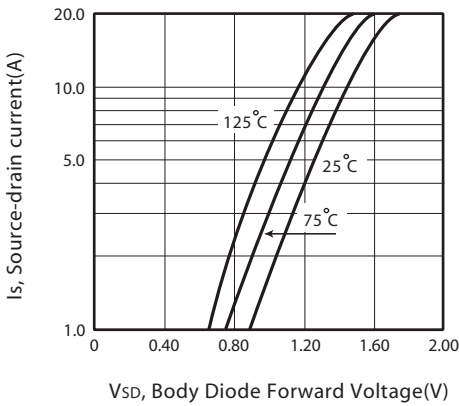


Figure 8. Body Diode Forward Voltage Variation with Source Current

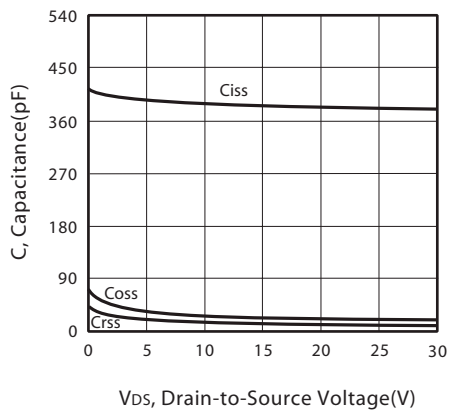


Figure 9. Capacitance

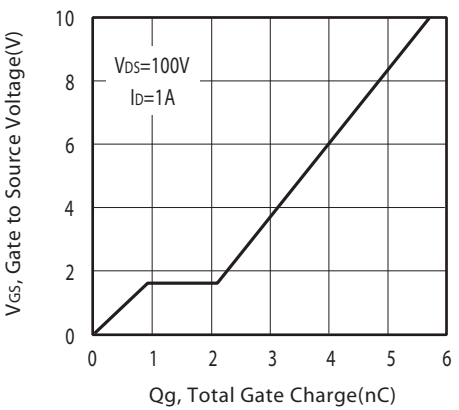


Figure 10. Gate Charge

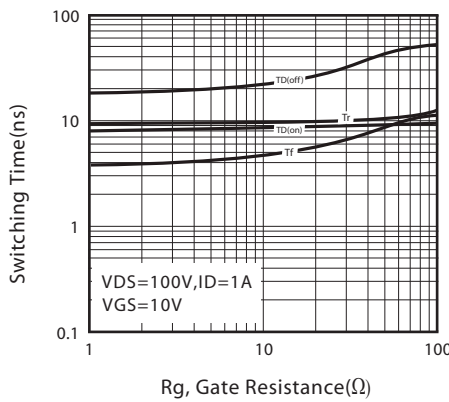


Figure 11. switching characteristics

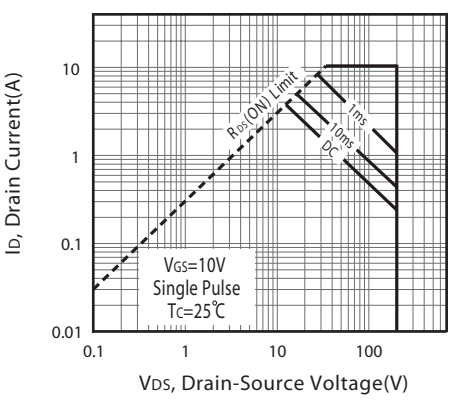


Figure 12. Maximum Safe Operating Area

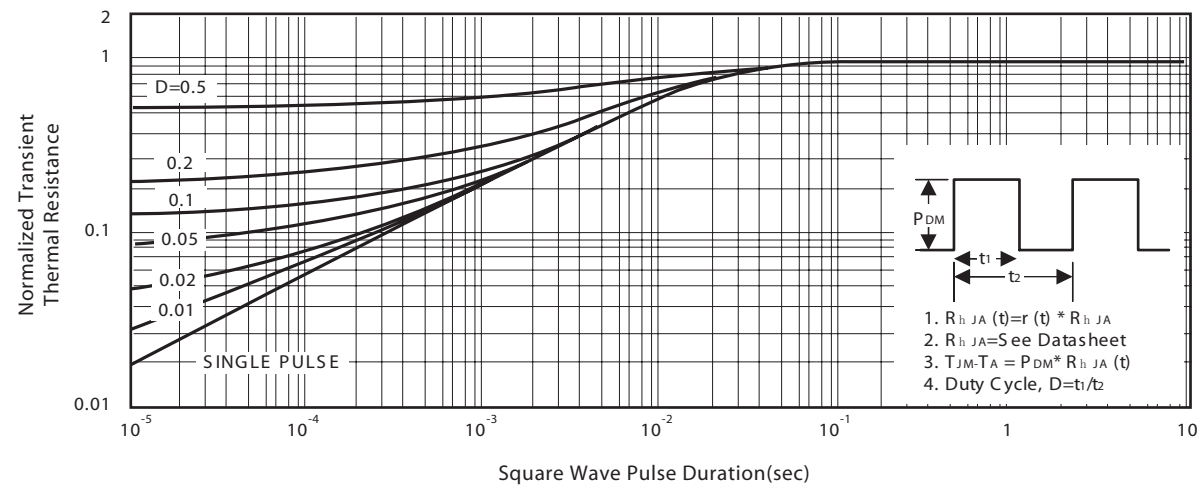
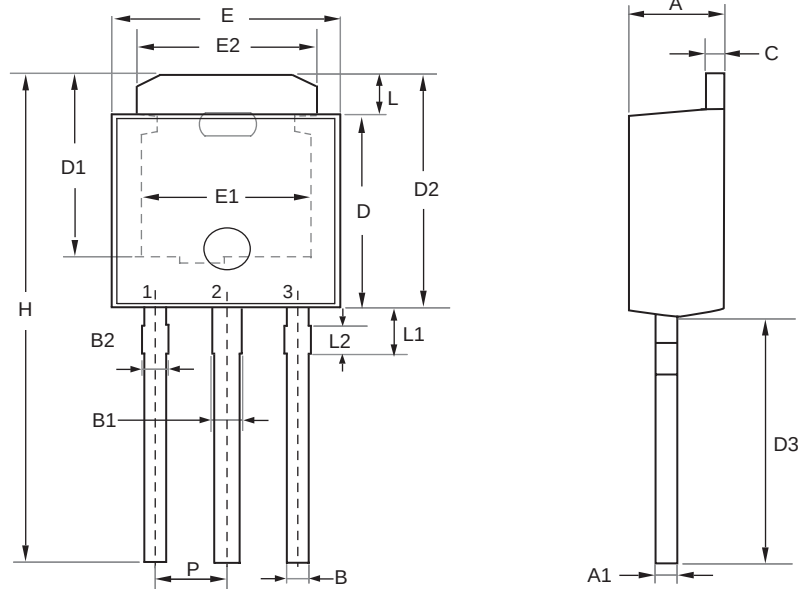


Figure 13. Normalized Thermal Transient Impedance Curve

PACKAGE OUTLINE DIMENSIONS

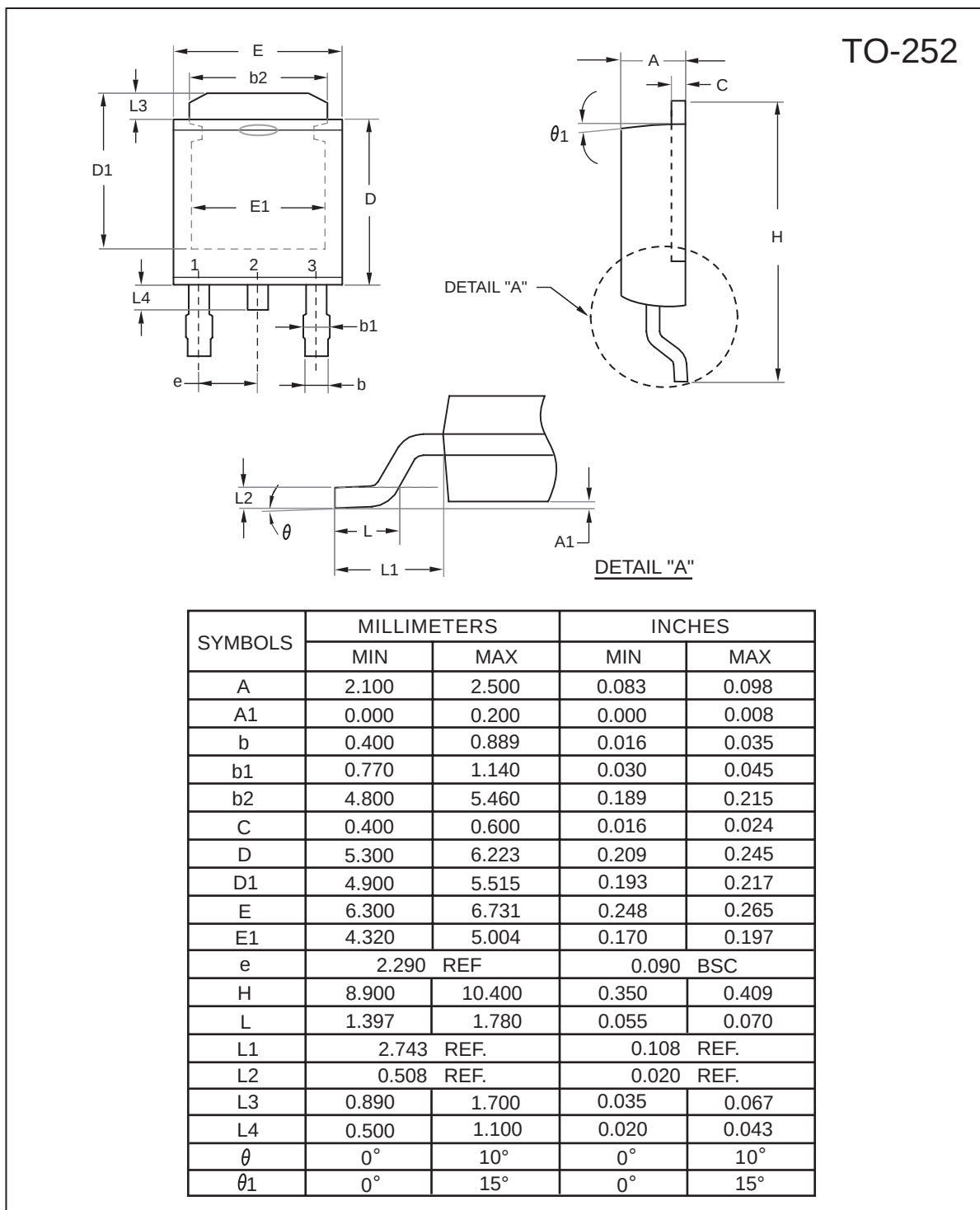
TO-251



SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.100	2.500	0.083	0.098
A1	0.350	0.650	0.014	0.026
B	0.400	0.800	0.016	0.031
B1	0.650	1.050	0.026	0.041
B2	0.500	0.900	0.020	0.035
C	0.400	0.600	0.016	0.024
D	5.300	5.700	0.209	0.224
D1	4.900	5.300	0.193	0.209
D2	6.700	7.300	0.264	0.287
D3	7.000	8.000	0.276	0.315
H	13.700	15.300	0.539	0.602
E	6.300	6.700	0.248	0.264
E1	4.600	4.900	0.181	0.193
E2	4.800	5.200	0.189	0.205
L	1.300	1.700	0.051	0.067
L1	1.400	1.800	0.055	0.071
L2	0.500	0.900	0.020	0.035
P	2.300 BSC		0.091 BSC	

STU/D04N20

Ver 1.0



Oct,26,2012

TO-251 Tube

TO-252 Reel

Oct,26,2012