SamHop Microelectronics Corp.

STU/D419S

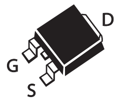
Mar,29, 2007

P-Channel Logic Level Enhancement Mode Field Effect Transistor

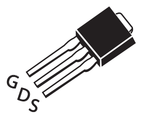
PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(ON)}$ (mΩ) Max
-40V	-40A	9 @ V_{GS} = -10V
		12 @ V_{GS} = -4.5V

FEATURES

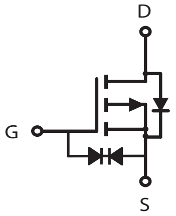
- Super high dense cell design for low $R_{DS(ON)}$.
- Rugged and reliable.
- Surface Mount Package.
- ESD Procteced



STU SERIES
TO-252AA(D-PAK)



STD SERIES
TO-251(I-PAK)



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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-40	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current-Continuous [a] @ Ta	25°C	I_D	-40	A
	70°C		-32	A
-Pulsed [b]		I_{DM}	-100	A
Drain-Source Diode Forward Current [a]		I_S	-10	A
Maximum Power Dissipation [a]	Ta= 25°C	P_D	50	W
	Ta=70°C		35	
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 175	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	50	°C/W

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P-Channel ELECTRICAL CHARACTERISTICS (T_A = 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	-40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =-32V, V_{GS}= 0V			-1	uA
Gate-Body Leakage	I_{GSS}	V_{GS} =±20V, V_{DS}= 0V			±10	uA
ON CHARACTERISTICS[a]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250uA	-1.0	-1.5	-3.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS} =-10V, I_D= -14A		7	9	m ohm
		V_{GS} =-4.5V, I_D= -10A		9.5	12	m ohm
On-State Drain Current	$I_{D(ON)}$	V_{DS} =-5V, V_{GS} = -10V	30			A
Forward Transconductance	g_{FS}	V_{DS} = -10V, I_D = -14A		9		S
DYNAMIC CHARACTERISTICS[b]						
Input Capacitance	C_{ISS}	V_{DS} =-15V, V_{GS} = 0V f =1.0MHz		3550		pF
Output Capacitance	C_{OSS}			710		pF
Reverse Transfer Capacitance	C_{RSS}			420		pF
SWITCHING CHARACTERISTICS[b]						
Turn-On Delay Time	$t_{D(ON)}$	V_{DD} = -15V I_D = -14 A V_{GS} = -10V R_{GEN} = 3ohm		40		ns
Rise Time	t_r			70		ns
Turn-Off Delay Time	$t_{D(OFF)}$			345		ns
Fall Time	t_f			125		ns
Total Gate Charge	Q_g	VDS =-15V, ID =-14A,VGS =-10V		87		nC
		VDS =-15V, ID =-14A,VGS =-4.5V		42		nC
Gate-Source Charge	Q_{gs}	V_{DS} =-15V, I_D = -14A V_{GS} =-10V		9		nC
Gate-Drain Charge	Q_{gd}			20		nC

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ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS [a]						
Diode Forward Voltage	V_{SD}	V_{GS} = 0V, Is = -10A		-0.7	-1.2	V

Notes

a.Pulse Test:Pulse Width ≤300us, Duty Cycle ≤2%.

b.Guaranteed by design, not subject to production testing.

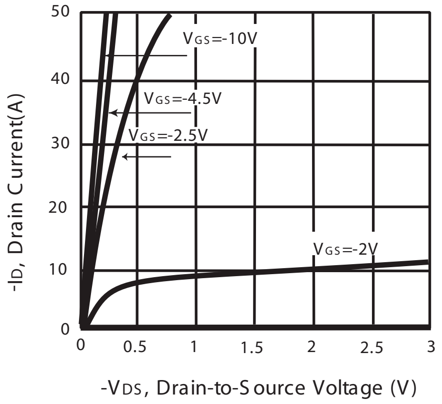


Figure 1. Output Characteristics

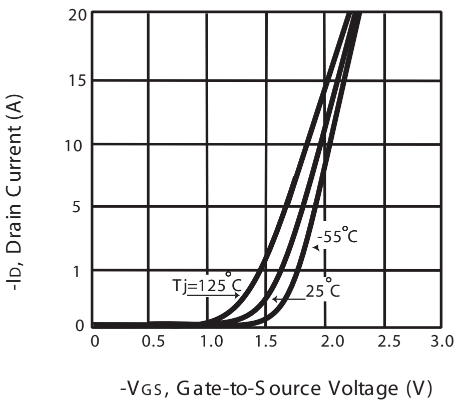


Figure 2. Transfer Characteristics

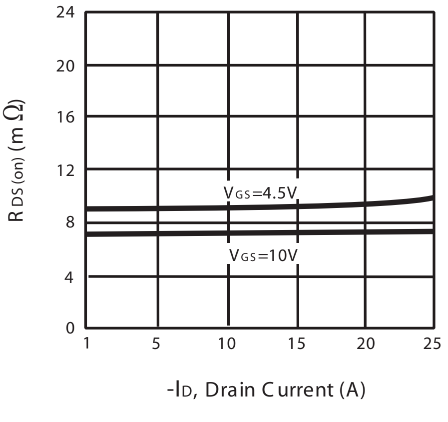


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

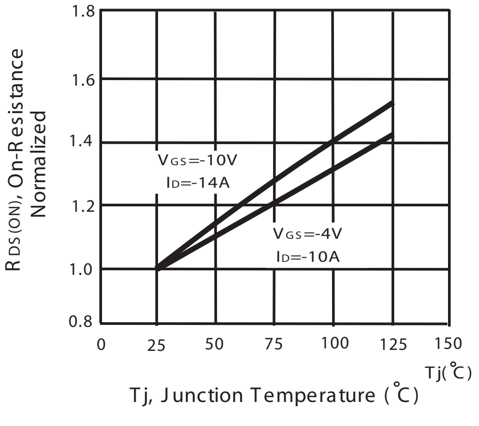


Figure 4. On-Resistance Variation with Drain Current and Temperature

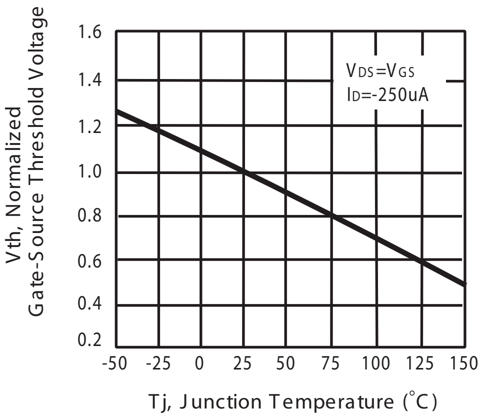


Figure 5. Gate Threshold Variation with Temperature

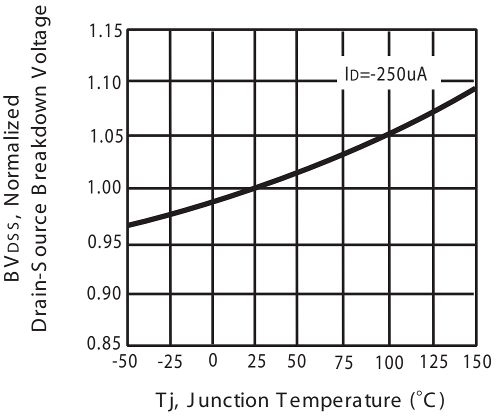


Figure 6. Breakdown Voltage Variation with Temperature

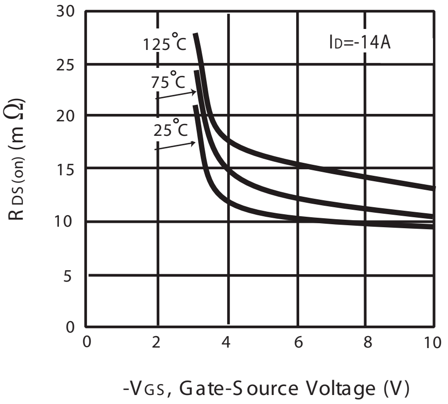


Figure 7. On-Resistance vs. Gate-Source Voltage

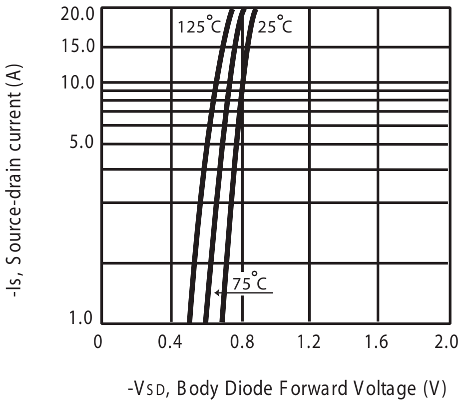


Figure 8. Body Diode Forward Voltage Variation with Source Current

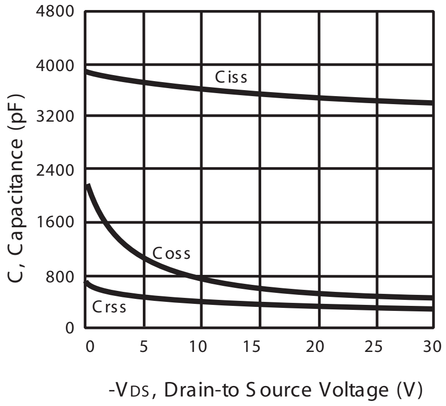


Figure 9. Capacitance

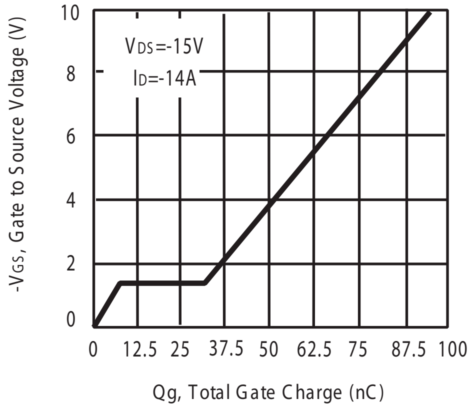


Figure 10. Gate Charge

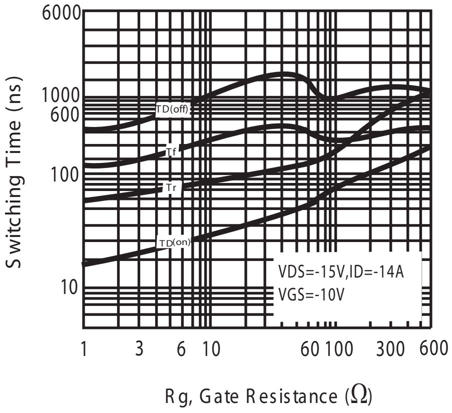


Figure 11.switching characteristics

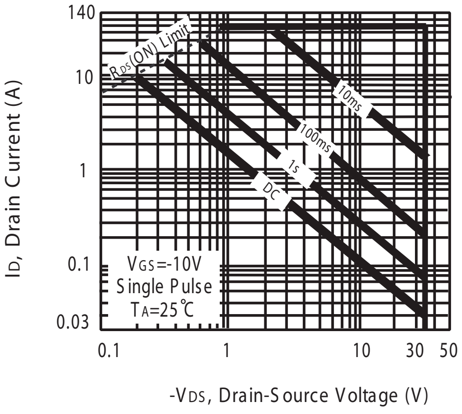


Figure 12. Maximum Safe
Operating Area

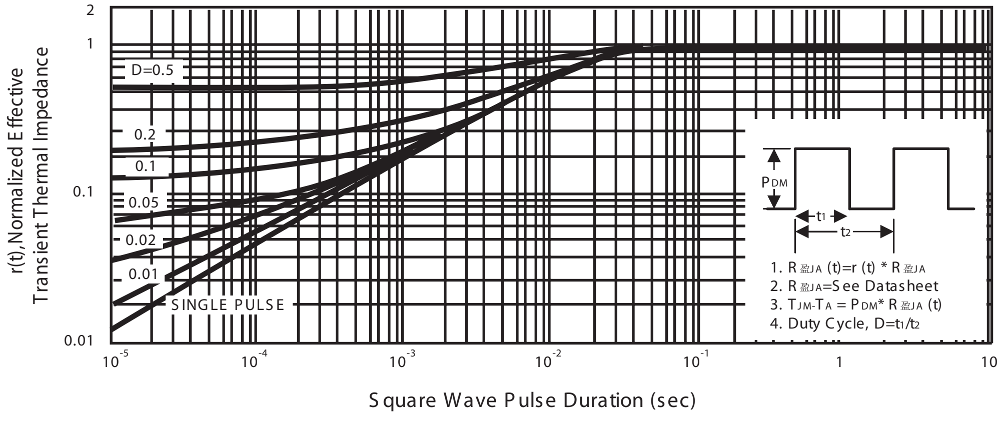
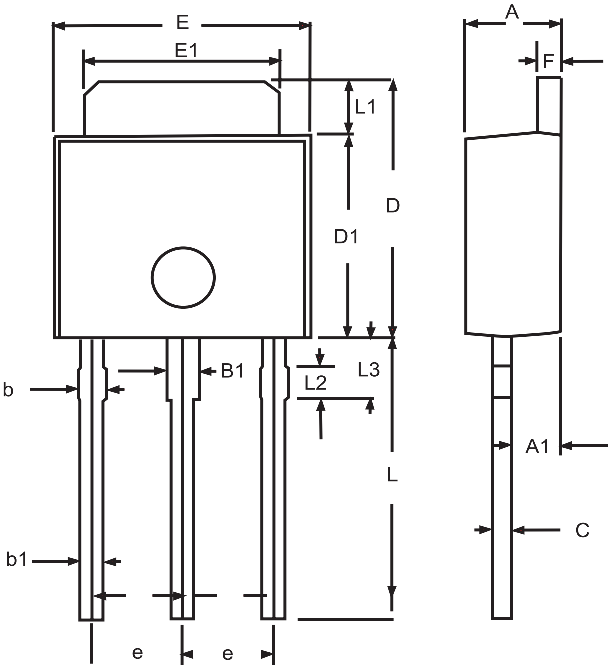


Figure 13. Normalized Thermal Transient Impedance Curve

PACKAGE OUTLINE DIMENSIONS

TO-251



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.20	2.40	0.087	0.095
A1	1.100	1.300	0.043	0.051
B1	0.650	1.050	0.026	0.041
b	0.500	0.900	0.020	0.035
b1	0.400	0.800	0.016	0..32
C	0.400	0.600	0.016	0.024
D	6.700	7.300	0.264	0.287
D1	5.400	5.650	0.213	0.222
E	6.40	6.650	0.252	0.262
e	2.100	2.500	0.083	0.098
F	0.400	0.600	0.016	0.024
L	7.000	8.000	0.276	0.315
L1	1.300	1.700	0.051	0.067
L2	0.700	0.900	0.028	0.035
L3	1.400	1.800	0.055	0.071

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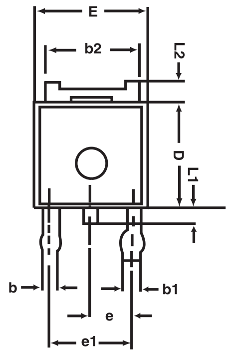
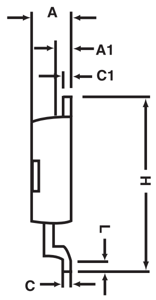
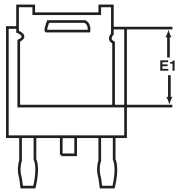
PACKAGE OUTLINE DIMENSIONS

TO-252







SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.25	2.35	0.089	0.093
A1	0.95	1.05	0.037	0.041
b	0.77	0.85	0.030	0.033
b1	0.84	0.94	0.033	0.037
b2	5.30	5.45	0.209	0.215
C	0.49	0.53	0.019	0.021
D	6.00	6.20	0.236	0.244
E	6.40	6.60	0.252	0.260
E1	3.18	3.67	0.125	0.145
e	2.29	BSC	0.090	BSC
H	9.70	10.10	0.382	0.398
L	1.425	1.625	0.056	0.064
L1	0.650	0.850	0.026	0.033
L2	0.600	REF .	0.024	REF .

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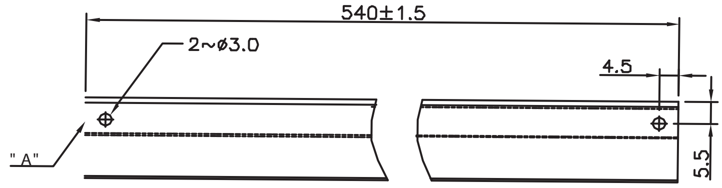
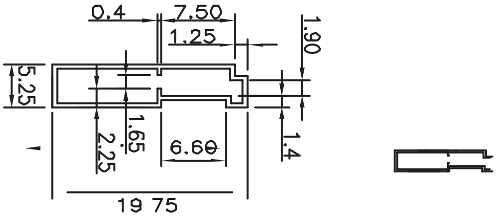
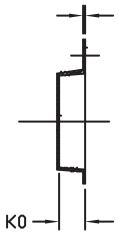
TO251 Tube/TO-252 Tape and Reel Data

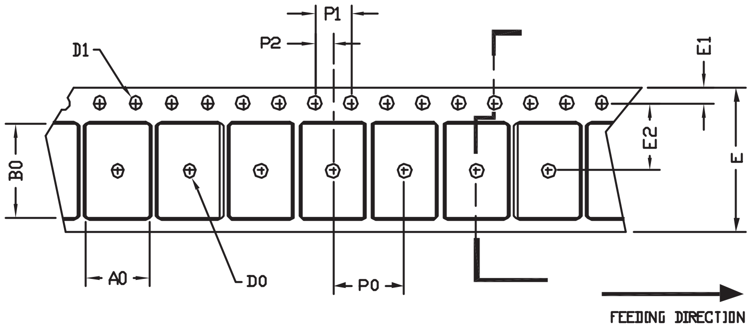
TO-251 Tube





TO-252 Carrier Tape

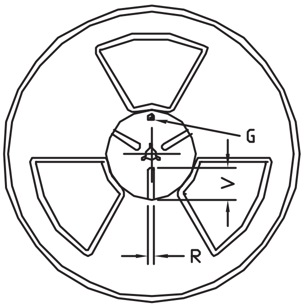


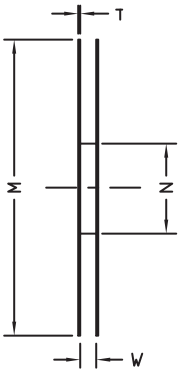


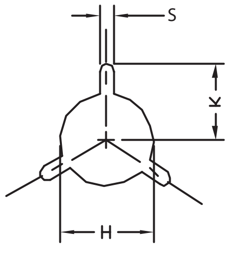
UNIT: ь

PACKAGE	A0	B0	K0	D0	D1	E	E 1	E 2	P0	P1	P2	T
TO-252 (16 ьI	6.80 0.1	10.3 0.1	2.50 0.1	榎2	榎1.5 + 0.1 - 0	16.0 0.3 亻	1.75 0.1 亻	7.5 0.15	8.0 0.1	4.0 0.1	2.0 0.15	0.3 0.05

TO-252 Reel







UNIT: ь

TAPE SIZE	REEL SIZE	M	N	W	T	H	K	S	G	R	V
16 ь	榎 330	榎330 0.5	榎97 1.0	17.0 + 1.5 - 0	2.2	榎13.0 + 0.5 - 0.2	10.6	2.0 0.5	---	---	---