



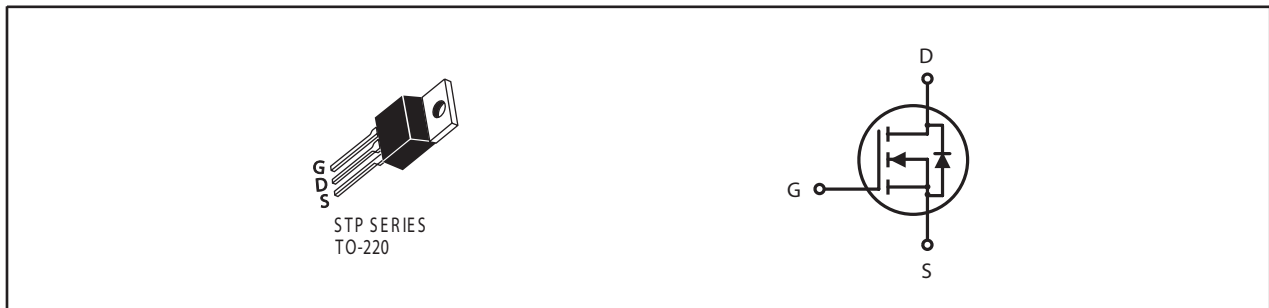
## N-Channel Logic Level Enhancement Mode Field Effect Transistor

### PRODUCT SUMMARY

V <sub>DSS</sub>	I <sub>D</sub>	R <sub>DS(ON)</sub> (mΩ) Typ
100V	35A	30 @ V <sub>GS</sub> =10V

### FEATURES

- Super high dense cell design for extremely low R<sub>DS(ON)</sub>.
- High power and current handling capability.
- TO-220 package.



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

Symbol	Parameter	Limit	Units
V <sub>DS</sub>	Drain-Source Voltage	100	V
V <sub>GS</sub>	Gate-Source Voltage	±20	V
I <sub>D</sub>	Drain Current-Continuous <sup>a</sup>	T <sub>C</sub> =25°C	35
		T <sub>C</sub> =70°C	29.3
I <sub>DM</sub>	-Pulsed <sup>a</sup>	103	A
P <sub>D</sub>	Maximum Power Dissipation	T <sub>C</sub> =25°C	75
		T <sub>C</sub> =70°C	52.5
T <sub>J</sub> , T <sub>STG</sub>	Operating Junction and Storage Temperature Range	-55 to 175	°C

### THERMAL CHARACTERISTICS

R <sub>θ JC</sub>	Thermal Resistance, Junction-to-Case	2	°C/W
R <sub>θ JA</sub>	Thermal Resistance, Junction-to-Ambient	62.5	°C/W

# STP35N10

Ver 1.1

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>OFF CHARACTERISTICS</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V , I <sub>D</sub> =250uA	100			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =80V , V <sub>GS</sub> =0V			1	uA
I <sub>GSS</sub>	Gate-Body leakage current	V <sub>GS</sub> = ±20V , V <sub>DS</sub> =0V			±100	nA
<b>ON CHARACTERISTICS</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1.5	2.5	3.5	V
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =10V , I <sub>D</sub> =17.5A		30	36	m ohm
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =10V , I <sub>D</sub> =17.5A		12		S
<b>DYNAMIC CHARACTERISTICS <sup>b</sup></b>						
C <sub>ISS</sub>	Input Capacitance	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V f=1.0MHz		1490		pF
C <sub>OSS</sub>	Output Capacitance			155		pF
C <sub>RSS</sub>	Reverse Transfer Capacitance			100		pF
<b>SWITCHING CHARACTERISTICS <sup>b</sup></b>						
t <sub>D(ON)</sub>	Turn-On DelayTime	V <sub>DD</sub> =50V I <sub>D</sub> =1A		36		ns
t <sub>r</sub>	Rise Time			41		ns
t <sub>D(OFF)</sub>	Turn-Off DelayTime	V <sub>GS</sub> =10V R <sub>GEN</sub> = 6 ohm		39		ns
t <sub>f</sub>	Fall Time			22		ns
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =50V, I <sub>D</sub> =17.5A, V <sub>GS</sub> =10V		19		nC
Q <sub>gs</sub>	Gate-Source Charge	V <sub>DS</sub> =50V, I <sub>D</sub> =17.5A, V <sub>GS</sub> =10V		2.6		nC
Q <sub>gd</sub>	Gate-Drain Charge			10		nC
<b>DRAIN-SOURCE DIODE CHARACTERISTICS</b>						
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =5A		0.8	1.3	V
<b>Notes</b> a. Drain current limited by maximum junction temperature. b. Guaranteed by design, not subject to production testing.						

Apr,22,2014

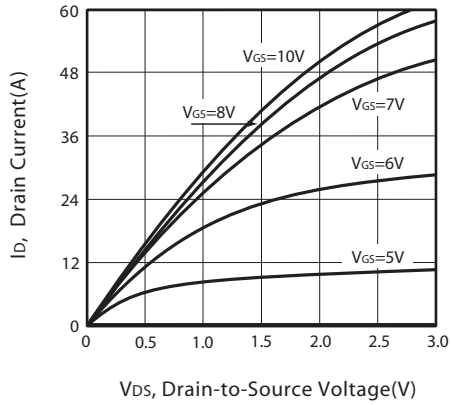


Figure 1. Output Characteristics

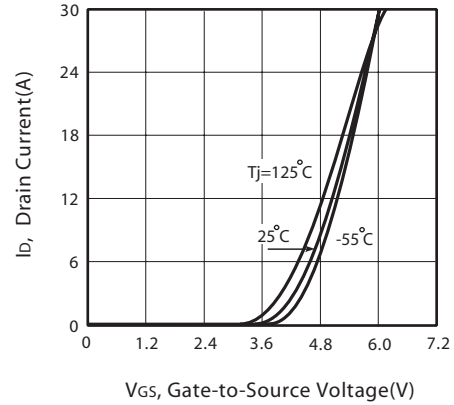


Figure 2. Transfer Characteristics

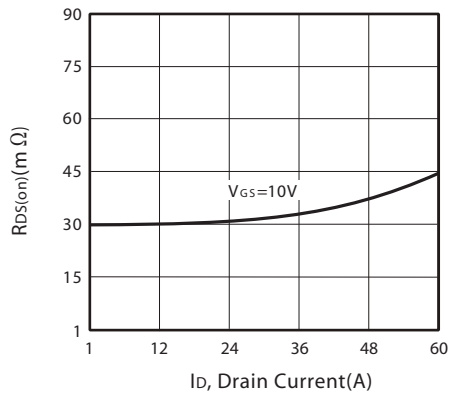


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

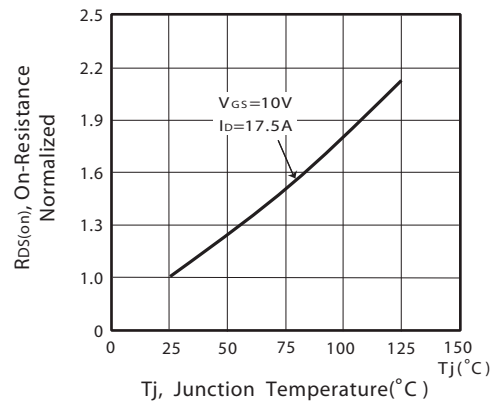


Figure 4. On-Resistance Variation with Drain Current and Temperature

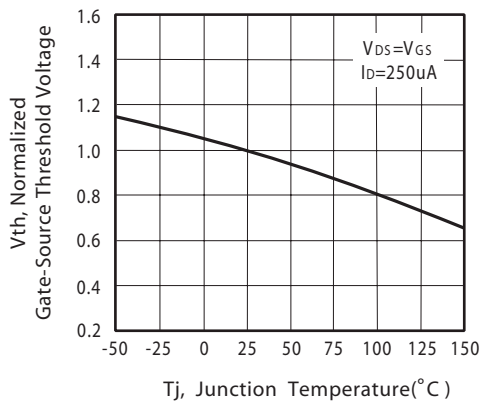


Figure 5. Gate Threshold Variation with Temperature

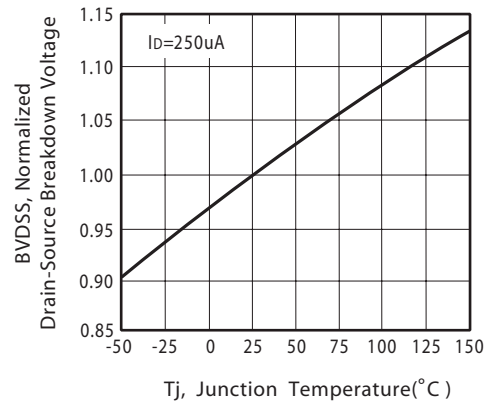


Figure 6. Breakdown Voltage Variation with Temperature

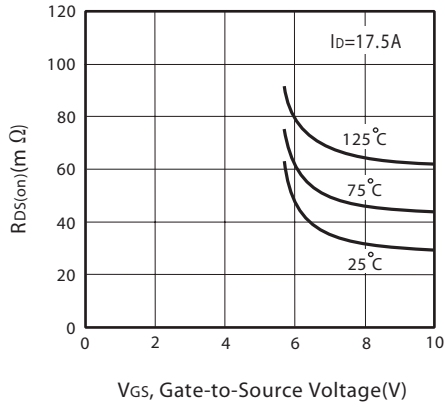


Figure 7. On-Resistance vs. Gate-Source Voltage

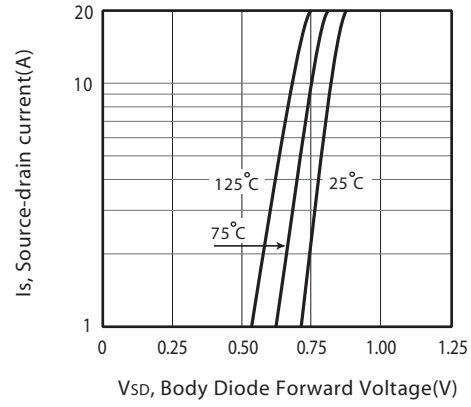


Figure 8. Body Diode Forward Voltage Variation with Source Current

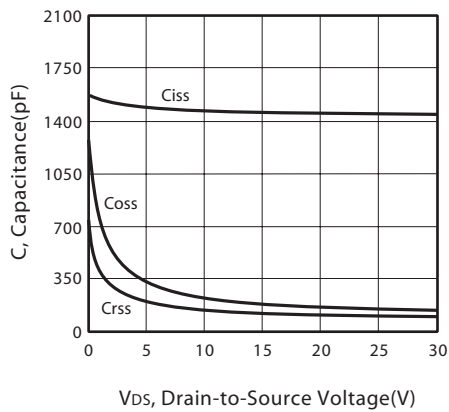


Figure 9. Capacitance

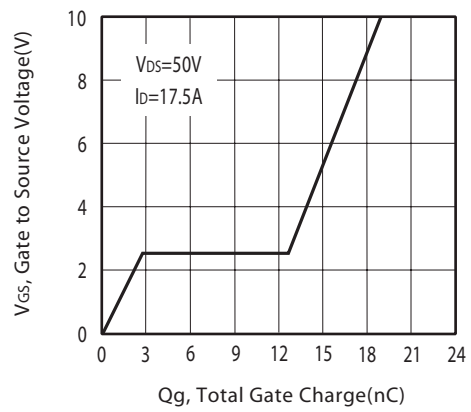


Figure 10. Gate Charge

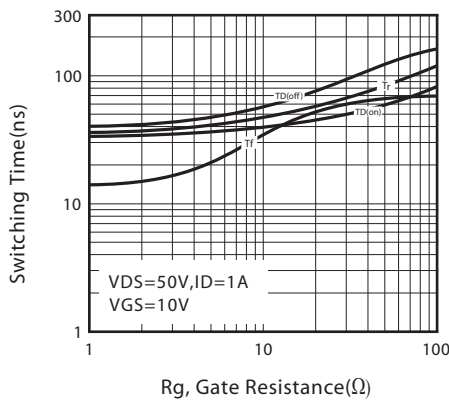


Figure 11. switching characteristics

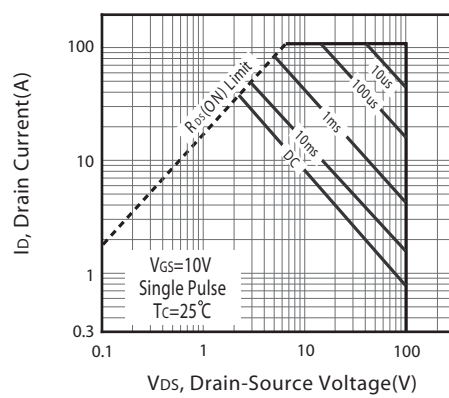
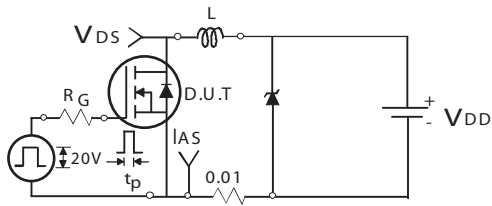


Figure 12. Maximum Safe Operating Area

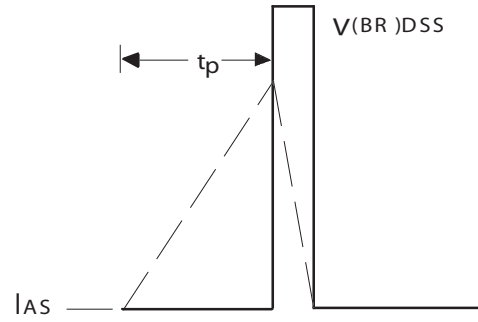
# STP35N10

Ver 1.1



Unclamped Inductive Test Circuit

Figure 13a.



Unclamped Inductive Waveforms

Figure 13b.

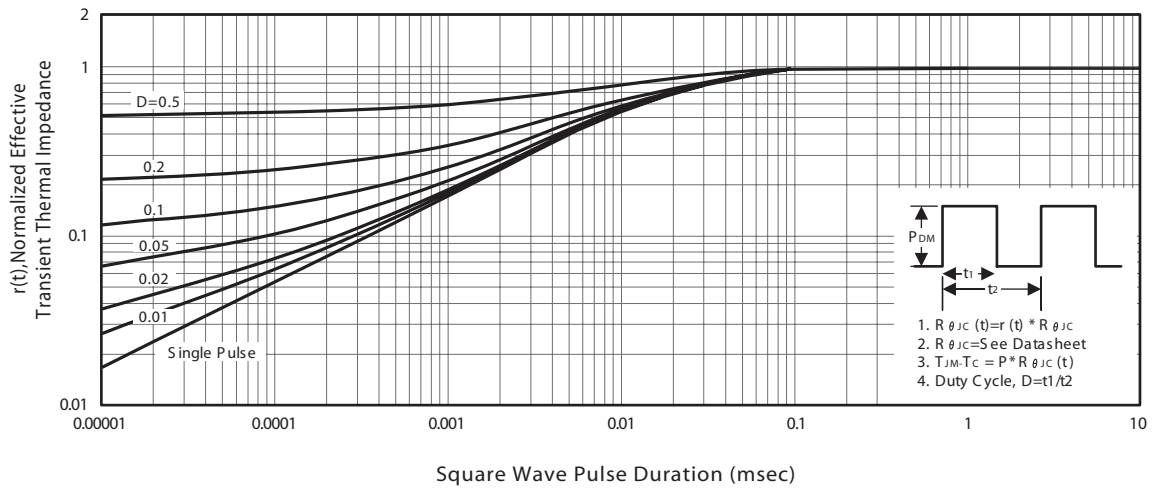


Figure 14. Normalized Thermal Transient Impedance Curve

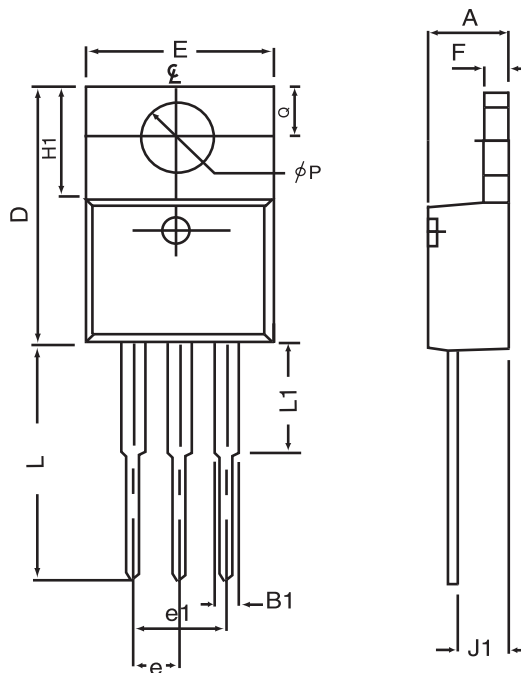
Apr,22,2014

# STP35N10

Ver 1.1

## PACKAGE OUTLINE DIMENSIONS

TO-220

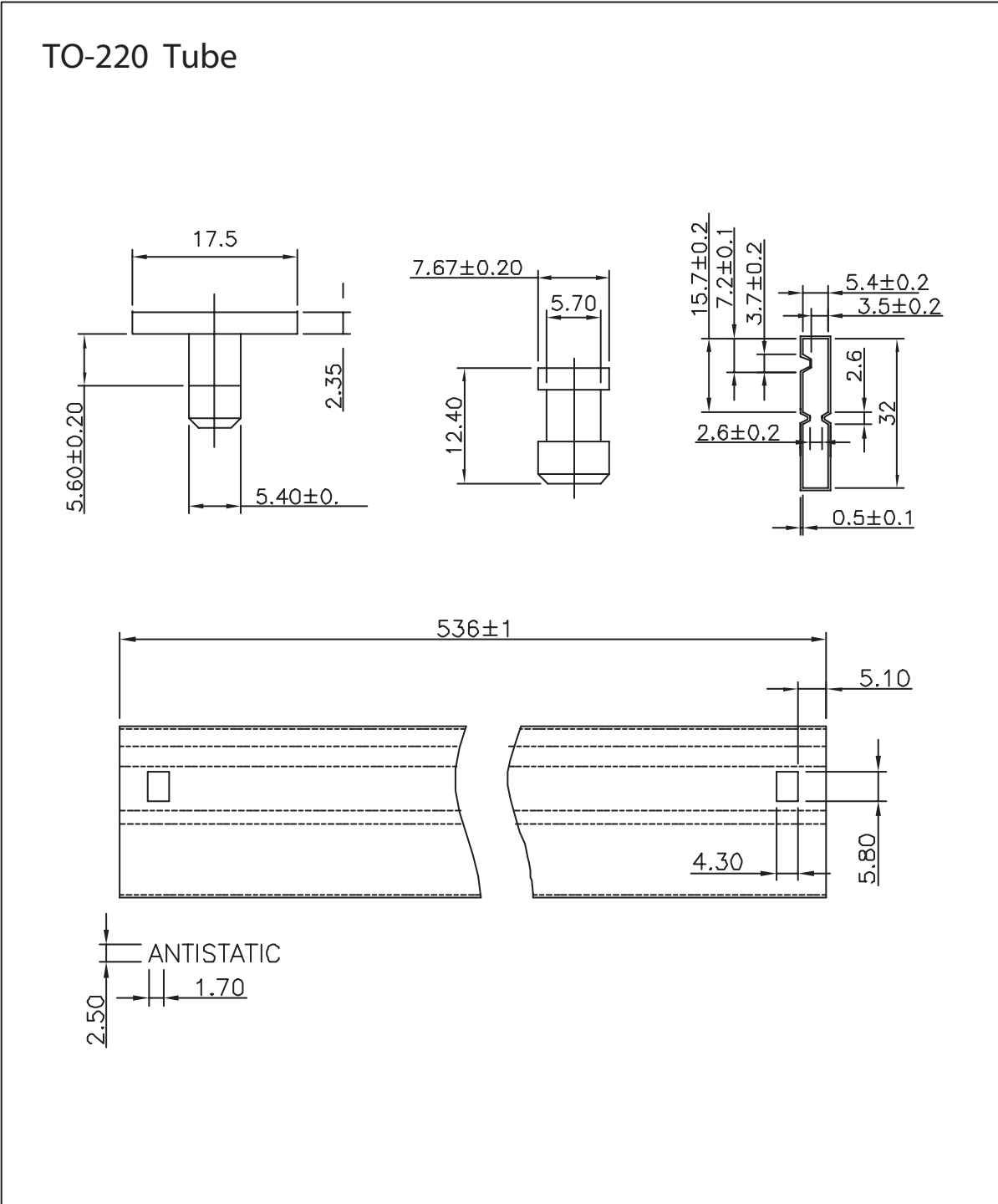


SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.32	4.80	0.170	0.189
B1	1.27	1.65	0.050	0.630
D	14.6	16.00	0.575	0.610
E	9.70	10.41	0.382	0.410
e	2.34	2.74	0.092	0.108
e1	4.68	5.48	0.184	0.216
F	1.14	1.40	0.045	0.055
H1	5.97	6.73	0.235	0.265
J1	2.20	2.79	0.087	0.110
L	12.88	14.22	0.507	0.560
L1	3.00	6.35	0.120	0.250
phi P	3.50	3.94	0.138	0.155
Q	2.54	3.05	0.100	0.120

Apr,22,2014

# STP35N10

Ver 1.1

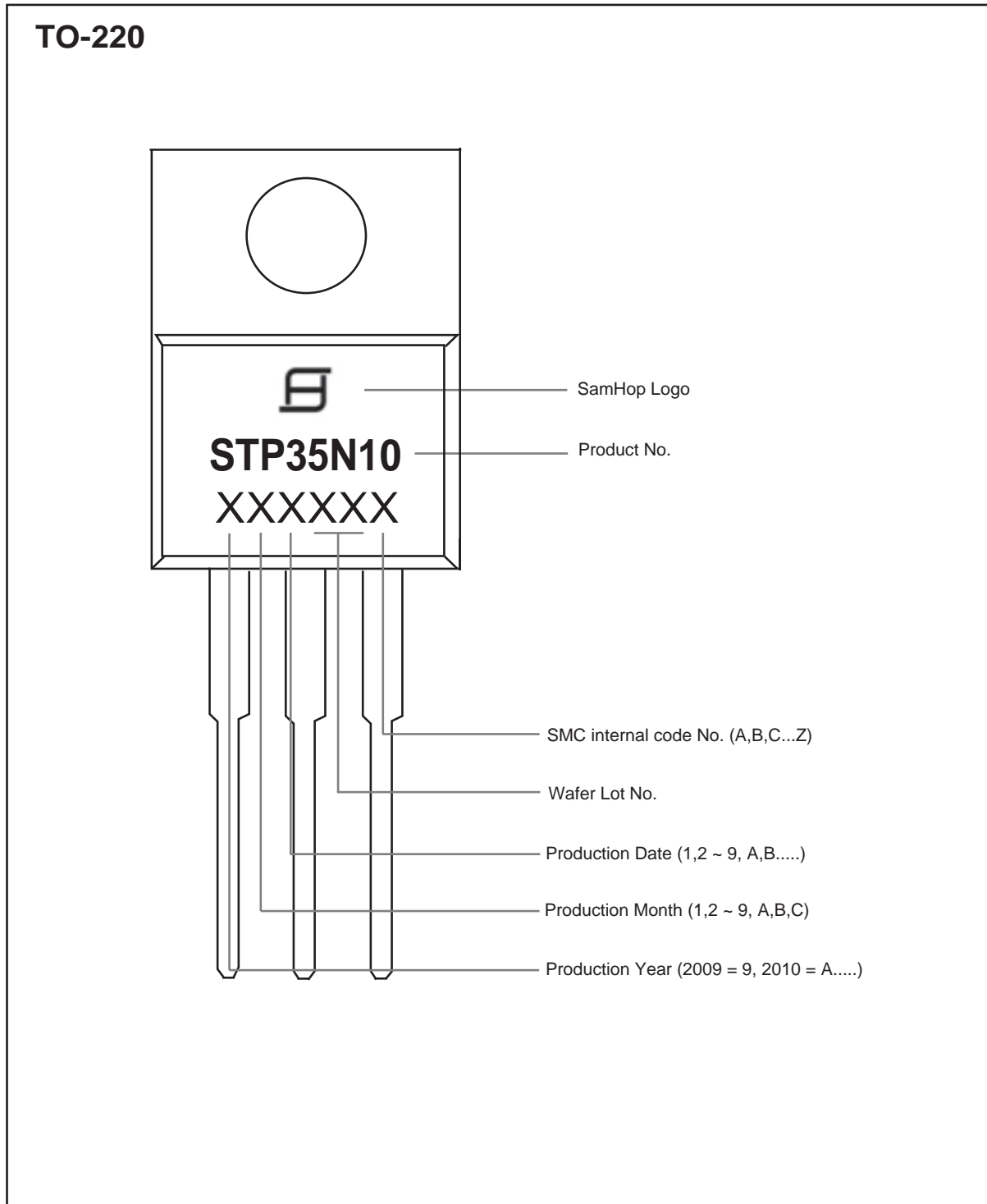


Apr,22,2014

# STP35N10

Ver 1.1

## TOP MARKING DEFINITION



Apr,22,2014