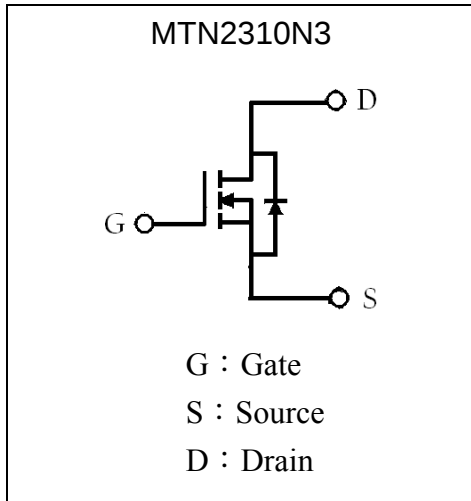
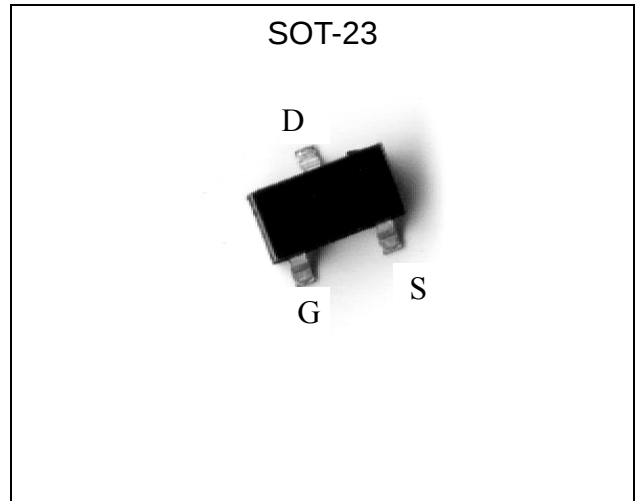


60V N-CHANNEL Enhancement Mode MOSFET

MTN2310N3

Features

- $V_{DS}=60V$
 $R_{DS(ON)}=90m\Omega$ (max.) @ $V_{GS}=10V$, $I_{DS}=3A$
 $R_{DS(ON)}=120m\Omega$ (max.) @ $V_{GS}=4.5V$, $I_{DS}=2A$
- Simple drive requirement
- Small package outline

Symbol

Outline

Absolute Maximum Ratings ($T_A=25^\circ C$)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current @ $V_{GS}=4.5V$, $T_A=25^\circ C$ (Note 3)	I_D	3.0	A
Continuous Drain Current @ $V_{GS}=4.5V$, $T_A=70^\circ C$ (Note 3)		2.3	A
Pulsed Drain Current (Notes 1, 2)	I_{DM}	10	A
Maximum Power Dissipation @ $T_A=25^\circ C$	P_D	1.38	W
Linear Derating Factor		0.01	W/ $^\circ C$
Operating Junction Temperature	T_j	$-55 \sim +150$	$^\circ C$
Storage Temperature	T_{stg}	$-55 \sim +150$	$^\circ C$

Note : 1. Pulse width limited by maximum junction temperature.

2. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

3. Surface mounted on 1 in² copper pad of FR-4 board; 270 $^\circ C/W$ when mounted on minimum copper pad

**Thermal Performance**

Parameter	Symbol	Limit	Unit
Thermal Resistance, Junction-to-Ambient(PCB mounted)	Rth,ja	90	°C/W

Note : Surface mounted on 1 in² copper pad of FR-4 board; 270°C/W when mounted on minimum copper pad

Electrical Characteristics (Tj=25°C, unless otherwise noted)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	60	-	-	V	V _{GS} =0, I _D =250μA
ΔBV _{DSS} /ΔT _j	-	0.05	-	V/°C	Reference to 25°C, I _D =1mA
V _{GS(th)}	1.0	-	3.0	V	V _{DS} =V _{GS} , I _D =250μA
I _{GSS}	-	-	±100	nA	V _{GS} =±20V, V _{DS} =0
I _{DSS}	-	-	10	μA	V _{DS} =60V, V _{GS} =0
	-	-	25	μA	V _{DS} =48V, V _{GS} =0 (T _j =70°C)
*R _{DS(ON)}	-	-	90	mΩ	I _D =3A, V _{GS} =10V
	-	-	120		I _D =2A, V _{GS} =4.5V
*G _{FS}	-	5	-	S	V _{DS} =5V, I _D =3A
Dynamic					
C _{iss}	-	490	780	pF	V _{DS} =25V, V _{GS} =0, f=1MHz
C _{oss}	-	55	-		
C _{rss}	-	40	-		
t _{d(ON)}	-	6	-	ns	V _{DS} =30V, I _D =1A, R _D =30Ω V _{GS} =10V, R _G =3.3Ω
t _r	-	5	-		
t _{d(OFF)}	-	16	-		
t _f	-	3	-		
Q _g	-	6	10	nC	V _{DS} =48V, I _D =3A, V _{GS} =4.5V
Q _{gs}	-	1.6	-		
Q _{gd}	-	3	-		
Source-Drain Diode					
*V _{SD}	-	-	1.2	V	V _{GS} =0V, I _S =1.2A
T _{rr}	-	25	-	ns	V _{GS} =0V, I _S =3A, dI/dt=100A/μs
Q _{rr}	-	26	-	nC	

*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Characteristic Curves

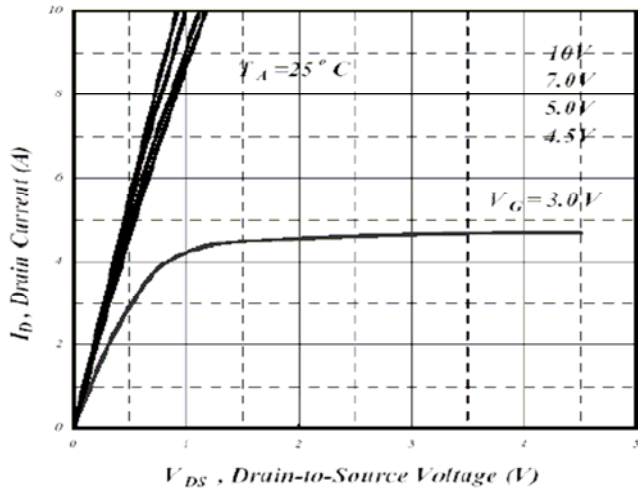


Fig 1. Typical Output Characteristics

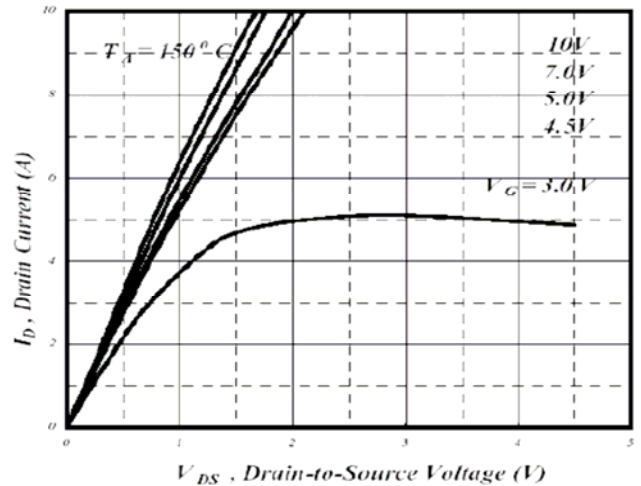


Fig 2. Typical Output Characteristics

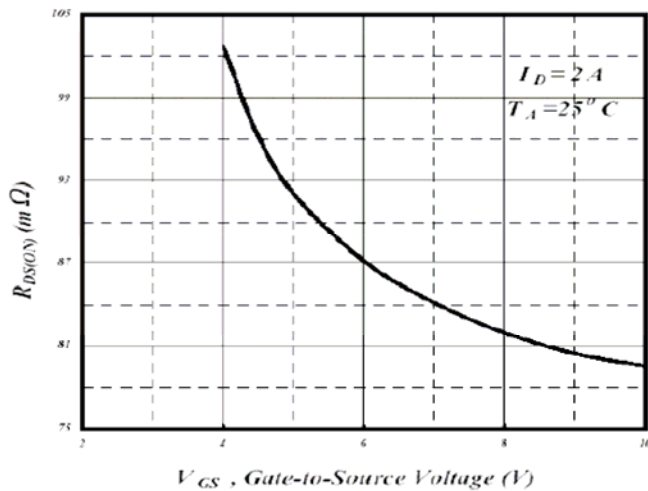


Fig 3. On-Resistance v.s. Gate Voltage

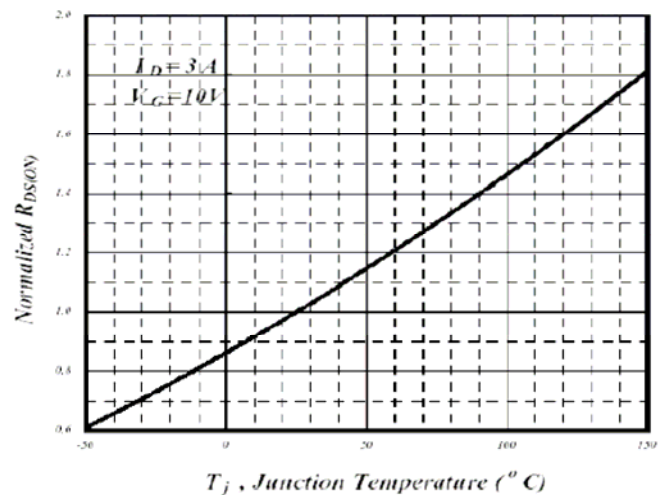


Fig 4. Normalized On-Resistance v.s. Junction Temperature

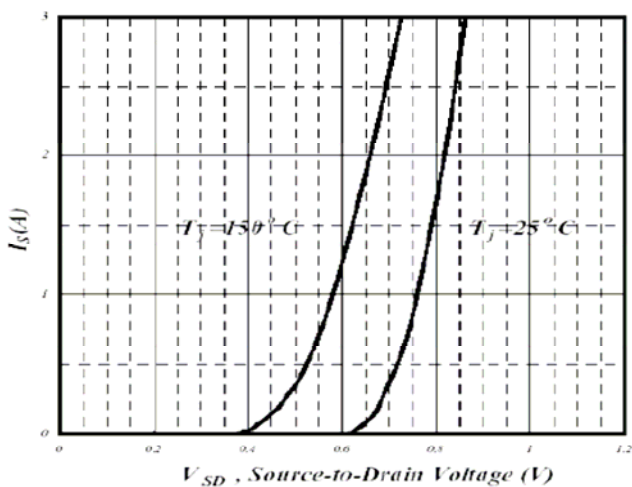


Fig 5. Forward Characteristics of Reverse Diode

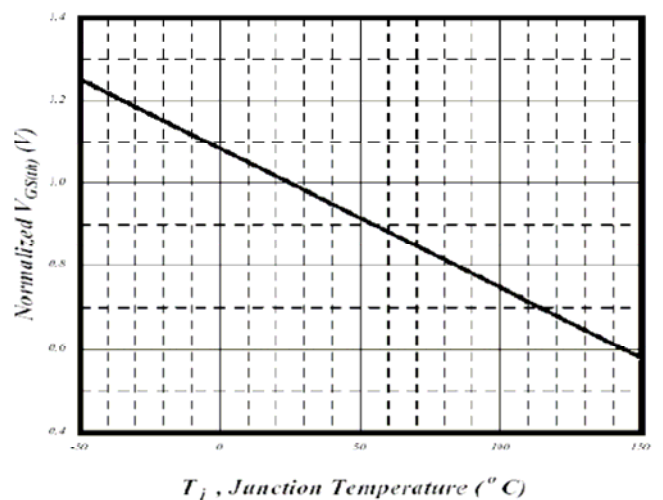


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

Characteristic Curves(Cont.)

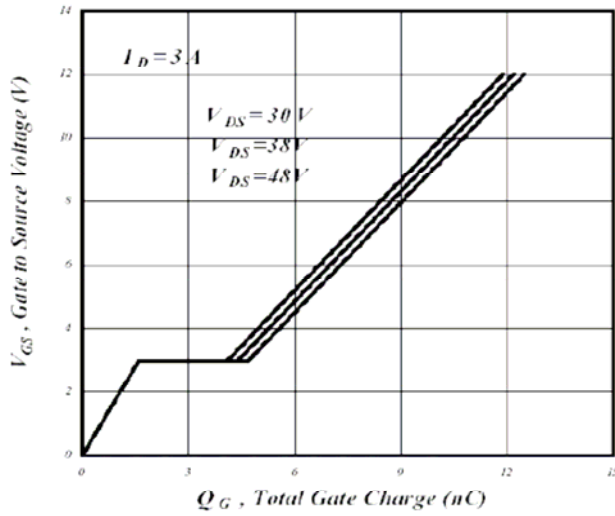


Fig 7. Gate Charge Characteristics

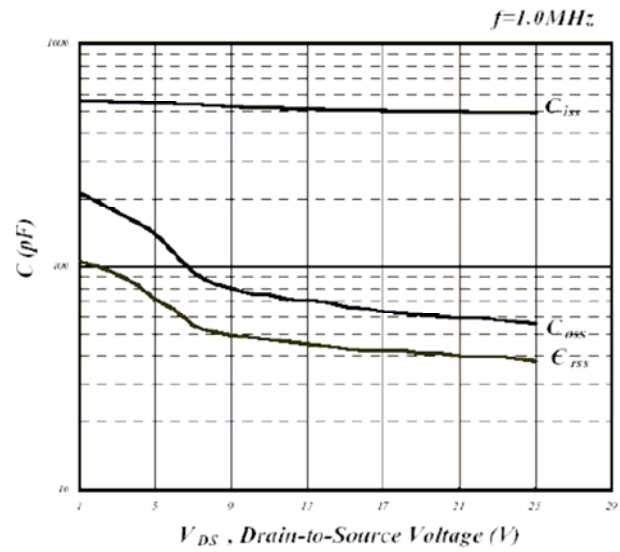


Fig 8. Typical Capacitance Characteristics

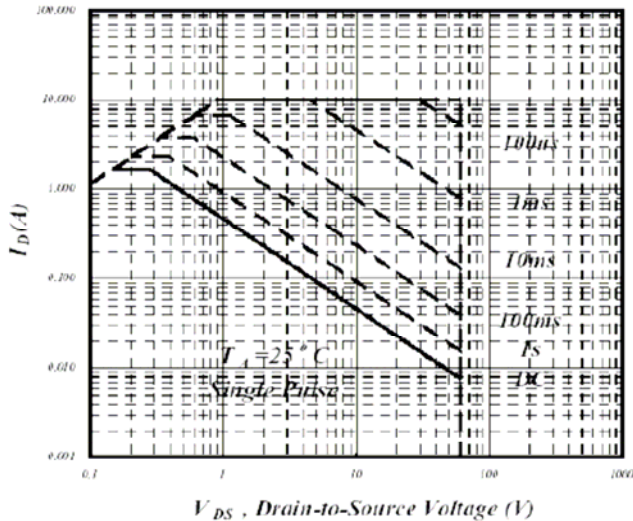


Fig 9. Maximum Safe Operating Area

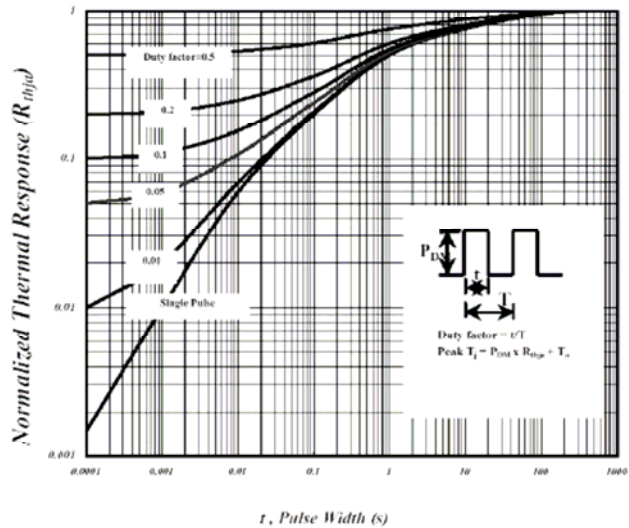


Fig 10. Effective Transient Thermal Impedance

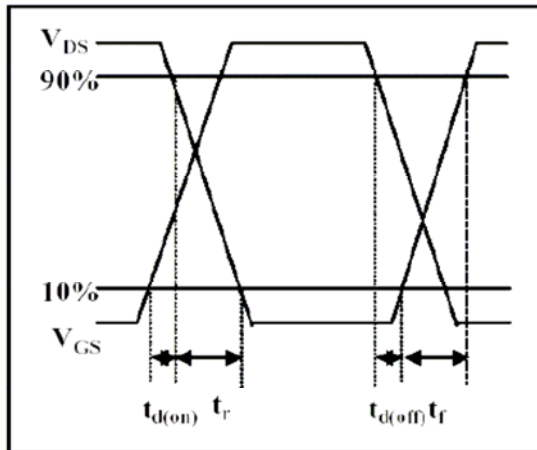


Fig 11. Switching Time Waveform

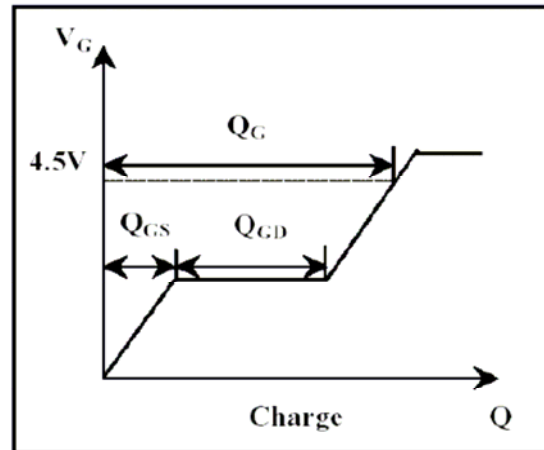
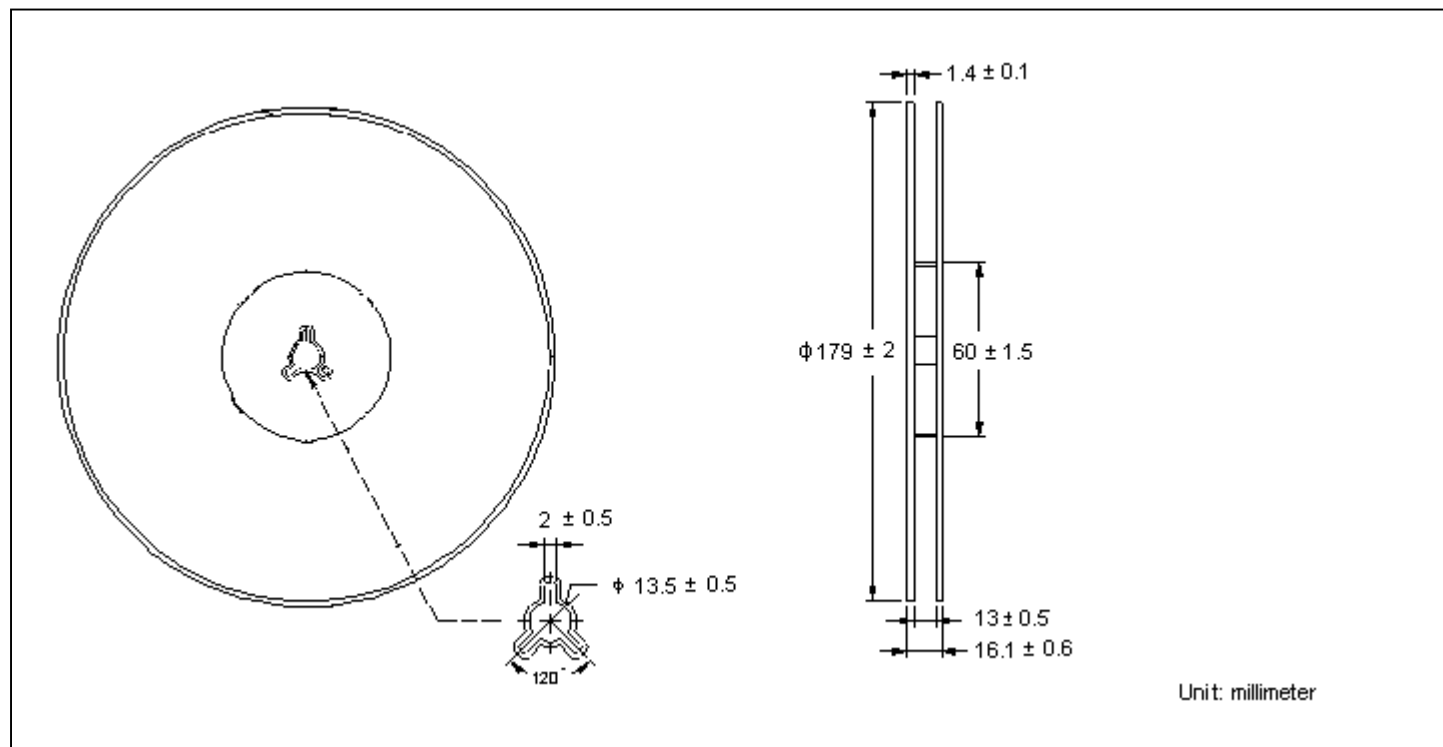
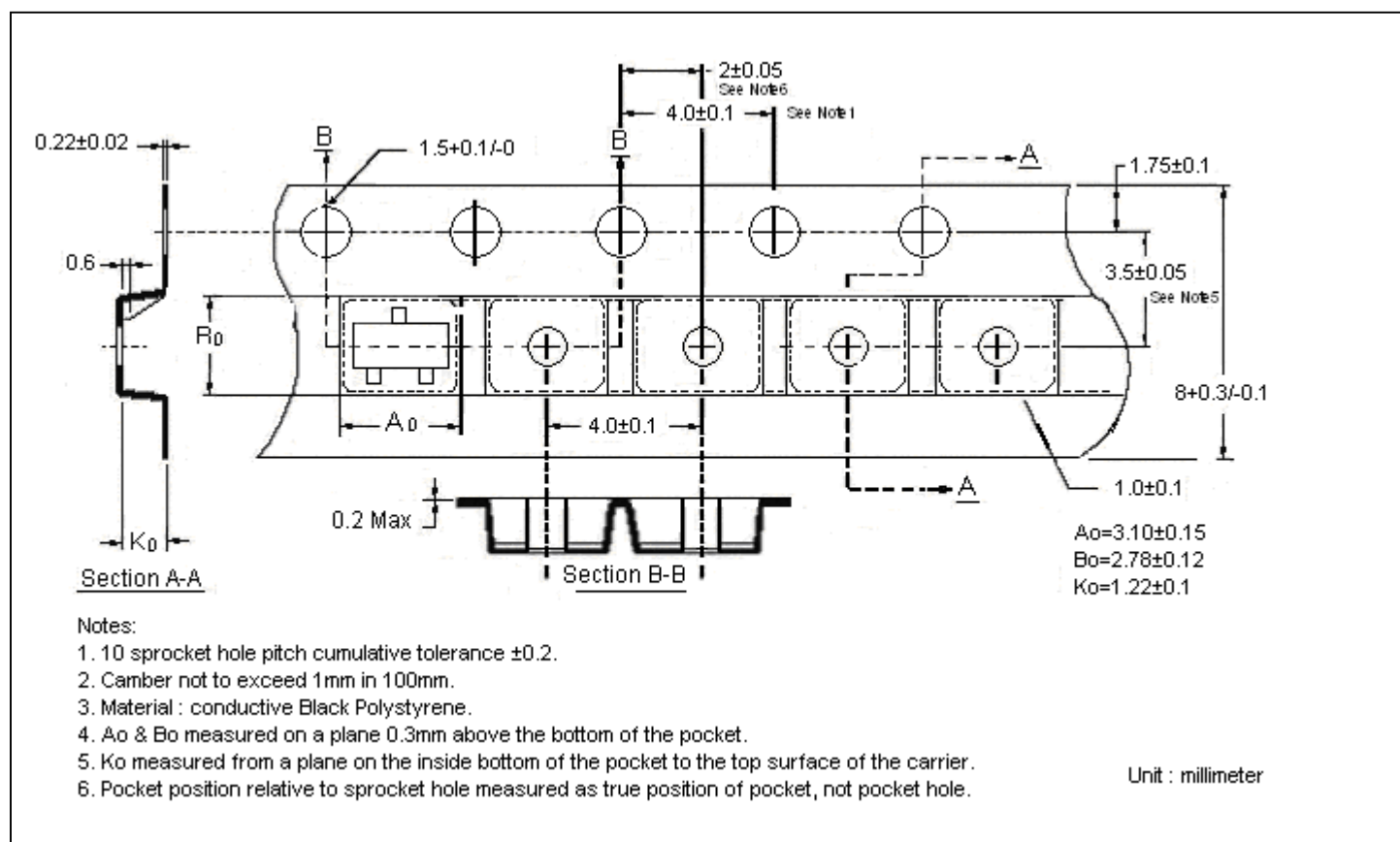


Fig 12. Gate Charge Waveform

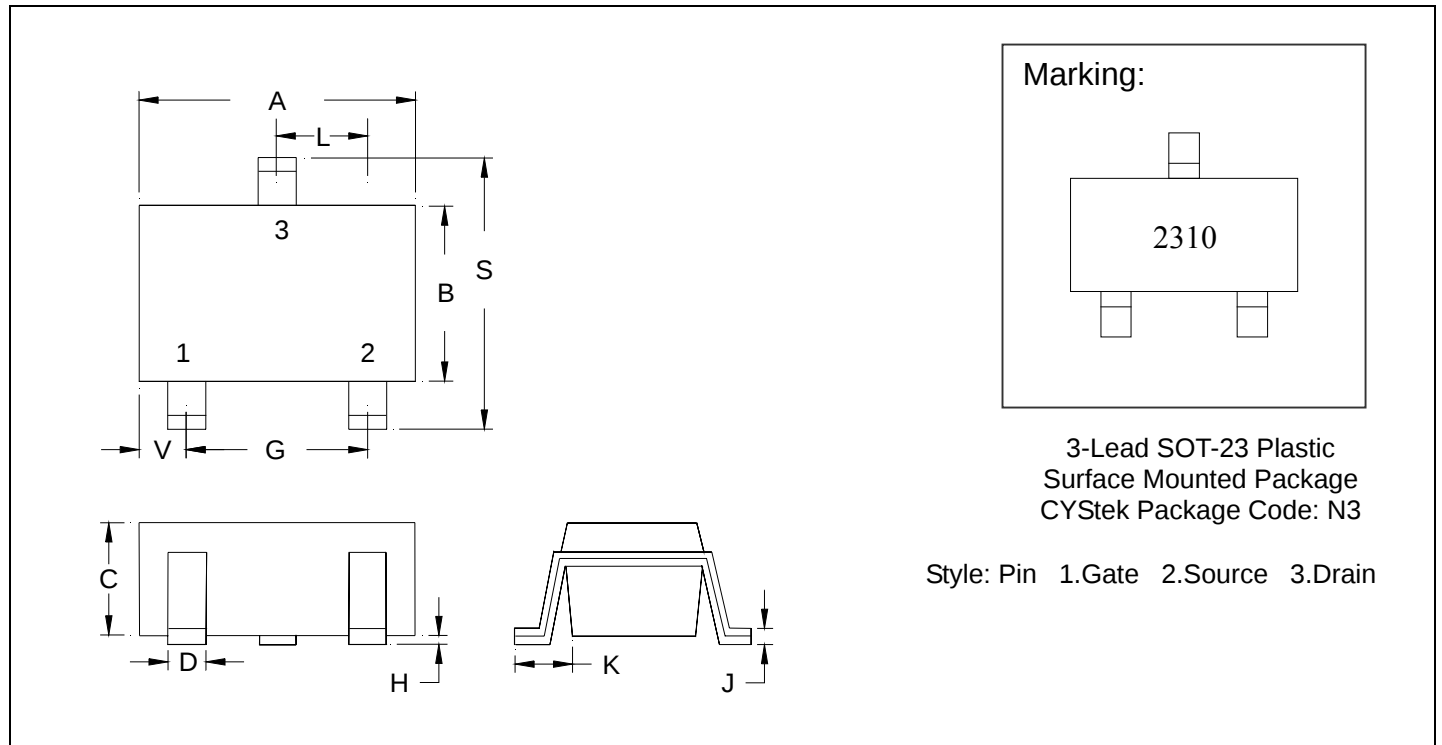
Reel Dimension



Carrier Tape Dimension



SOT-23 Dimension



*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1102	0.1204	2.80	3.04	J	0.0034	0.0070	0.085	0.177
B	0.0472	0.0630	1.20	1.60	K	0.0128	0.0266	0.32	0.67
C	0.0335	0.0512	0.89	1.30	L	0.0335	0.0453	0.85	1.15
D	0.0118	0.0197	0.30	0.50	S	0.0830	0.1083	2.10	2.75
G	0.0669	0.0910	1.70	2.30	V	0.0098	0.0256	0.25	0.65
H	0.0005	0.0040	0.013	0.10					

Notes: 1.Controlling dimension: millimeters.

2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.

3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: 42 Alloy ; solder plating
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

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