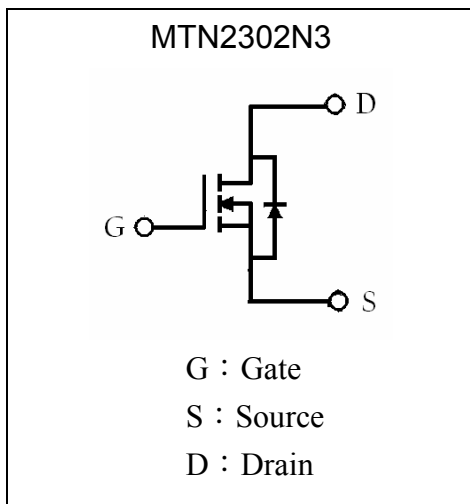
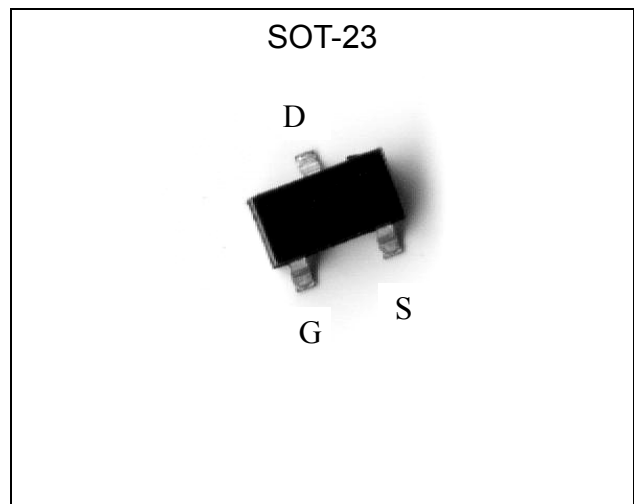


20V N-CHANNEL Enhancement Mode MOSFET

MTN2302N3

Features

- $V_{DS}=20V$
 $R_{DS(ON)}=65m\Omega @V_{GS}=4.5V, I_{DS}=3.6A$
 $R_{DS(ON)}=95m\Omega @V_{GS}=2.5V, I_{DS}=3.1A$
- Advanced trench process technology
- High density cell design for ultra low on resistance
- Excellent thermal and electrical capabilities
- Compact and low profile SOT-23 package

Equivalent Circuit

Outline

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V _{DS}	20	V
Gate-Source Voltage	V _{GS}	±8	V
Continuous Drain Current	I _D	2.4	A
Pulsed Drain Current	I _{DM}	10	A
Maximum Power Dissipation	P _D	Ta=25°C	W
		Ta=75°C	
Operating Junction Temperature	T _j	-55~+150	°C
Storage Temperature	T _{stg}	-55~+150	°C



Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance, Junction-to-Ambient(PCB mounted)	R _{th,ja}	100	°C/W
Lead Temperature, for 5 second Soldering(1/8" from case)	T _L	260	°C

Note : Surface mounted on FR-4 board, t ≤ 5sec.

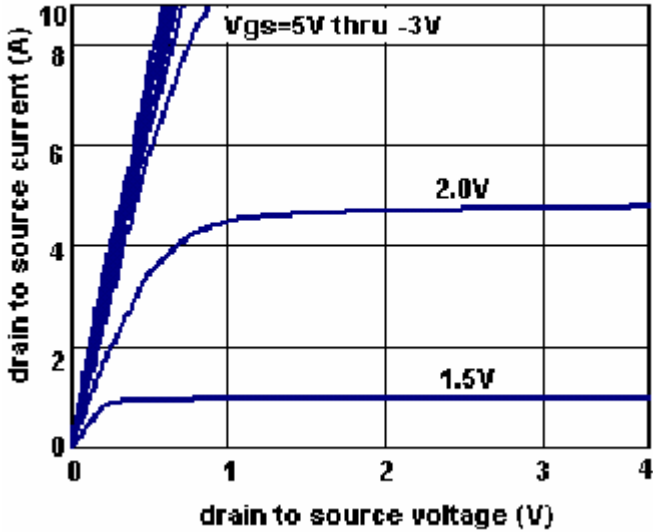
Electrical Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	20	-	-	V	V _{GS} =0, I _D =250μA
V _{GS(th)}	0.45	-	-	V	V _{DS} =V _{GS} , I _D =250μA
I _{GSS/F}	-	-	100	nA	V _{GS} =+8V, V _{DS} =0
I _{GSS/R}	-	-	-100	nA	V _{GS} =-8V, V _{DS} =0
I _{DSS}	-	-	1	μA	V _{DS} =20V, V _{GS} =0
*I _{D(ON)}	6	-	-	A	V _{DS} =5V, V _{GS} =4.5V
*R _{DS(ON)}	-	50	65	mΩ	I _D =3.6A, V _{GS} =4.5V
	-	75	95		I _D =3.1A, V _{GS} =2.5V
*G _{FS}	-	10	-	S	V _{DS} =5V, I _D =3.6A
Dynamic					
C _{iss}	-	450	-	pF	V _{DS} =10V, V _{GS} =0, f=1MHz
C _{oss}	-	70	-		
C _{rss}	-	43	-		
t _{d(ON)}	-	7	15	ns	V _{DD} =10V, I _D =1A, R _L =10Ω V _{GEN} =4.5V, R _G =6Ω
t _r	-	55	80		
t _{d(OFF)}	-	16	60		
t _f	-	10	25		
Q _g	-	5.2	10	nC	V _{DS} =10V, I _D =3.6A, V _{GS} =4.5V,
Q _{gs}	-	0.65	-		
Q _{gd}	-	1.5	-		
Source-Drain Diode					
I _{SD}	-	-	1.6	A	-
V _{SD}	-	0.75	1.2	V	V _{GS} =0V, I _{SD} =1A

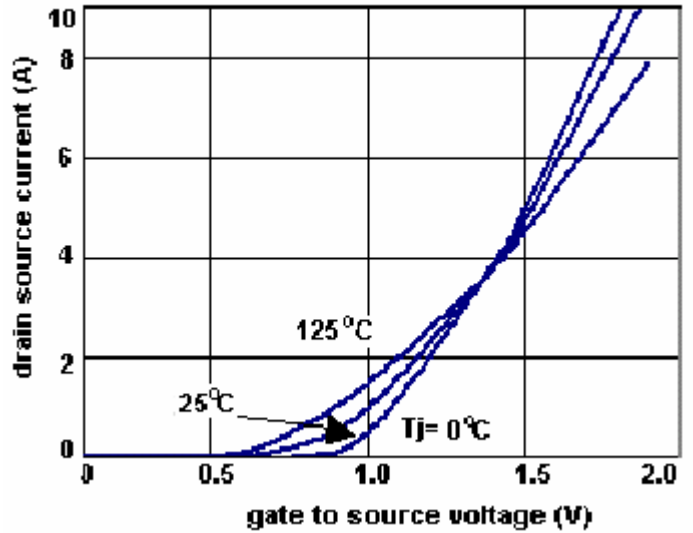
*Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

Characteristic Curves

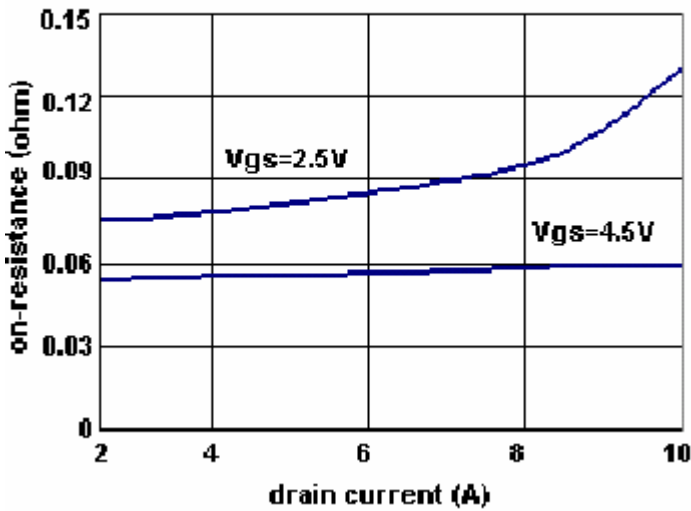
Output Characteristic



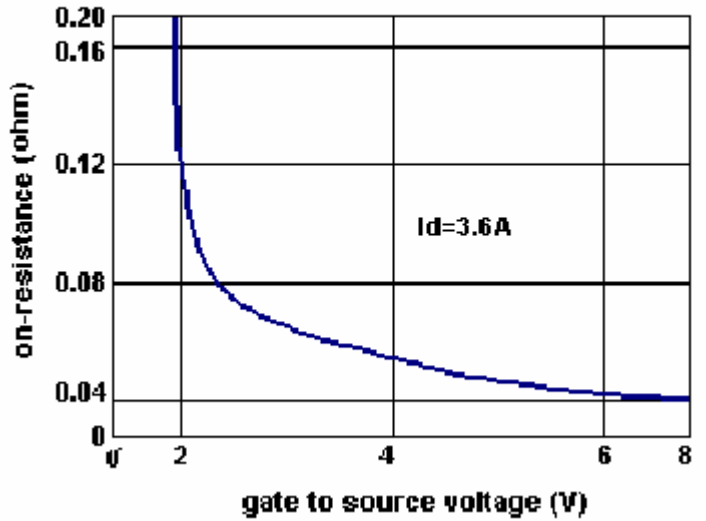
Transfer Characteristic



On Resistance vs Drain Current

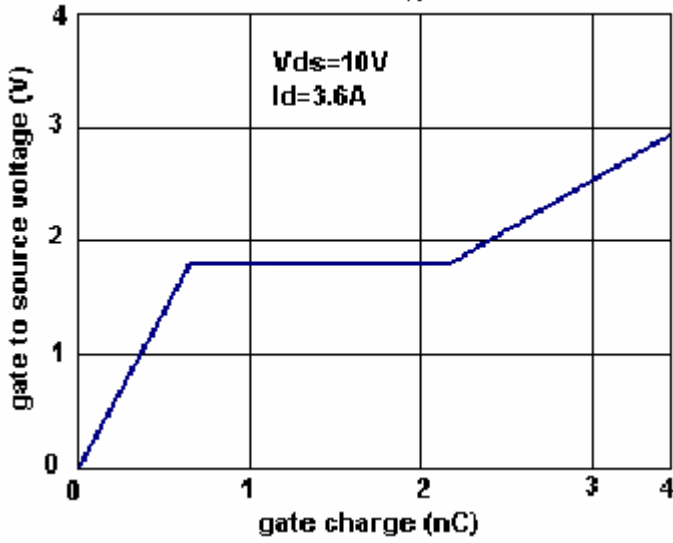


On Resistance vs Gate-Source

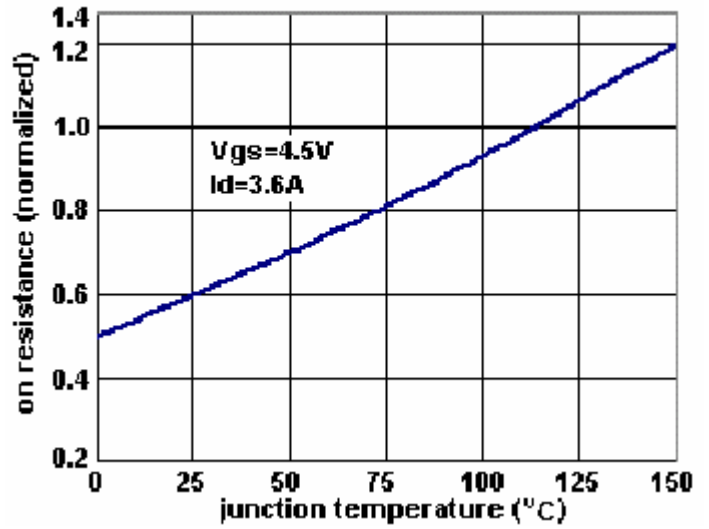




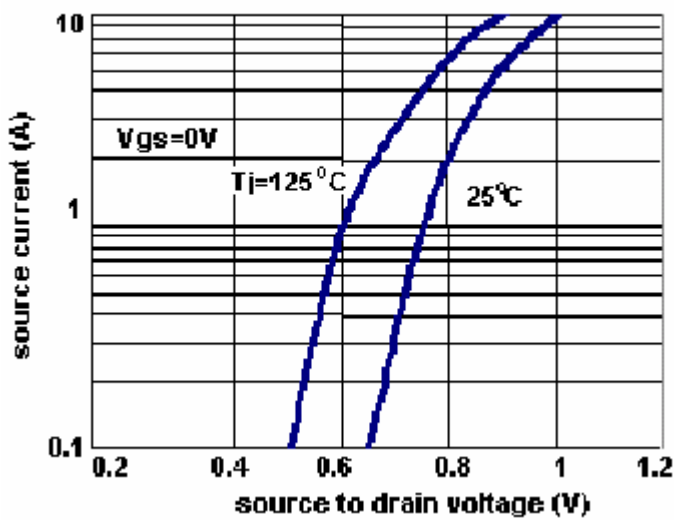
Gate Charge



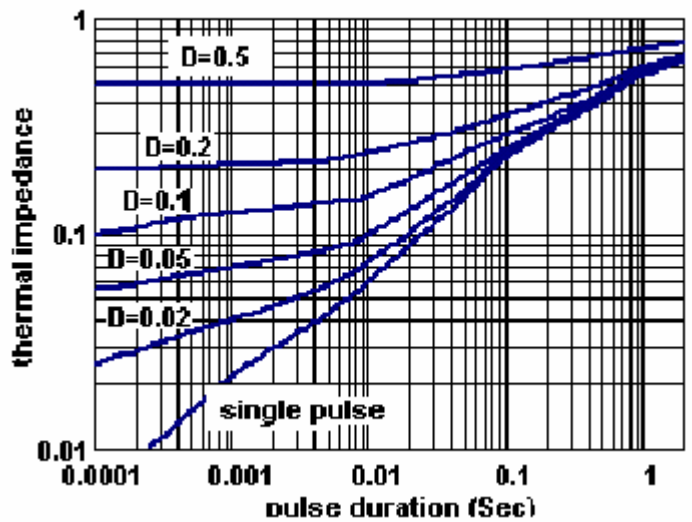
On Resistance vs Junction temp.



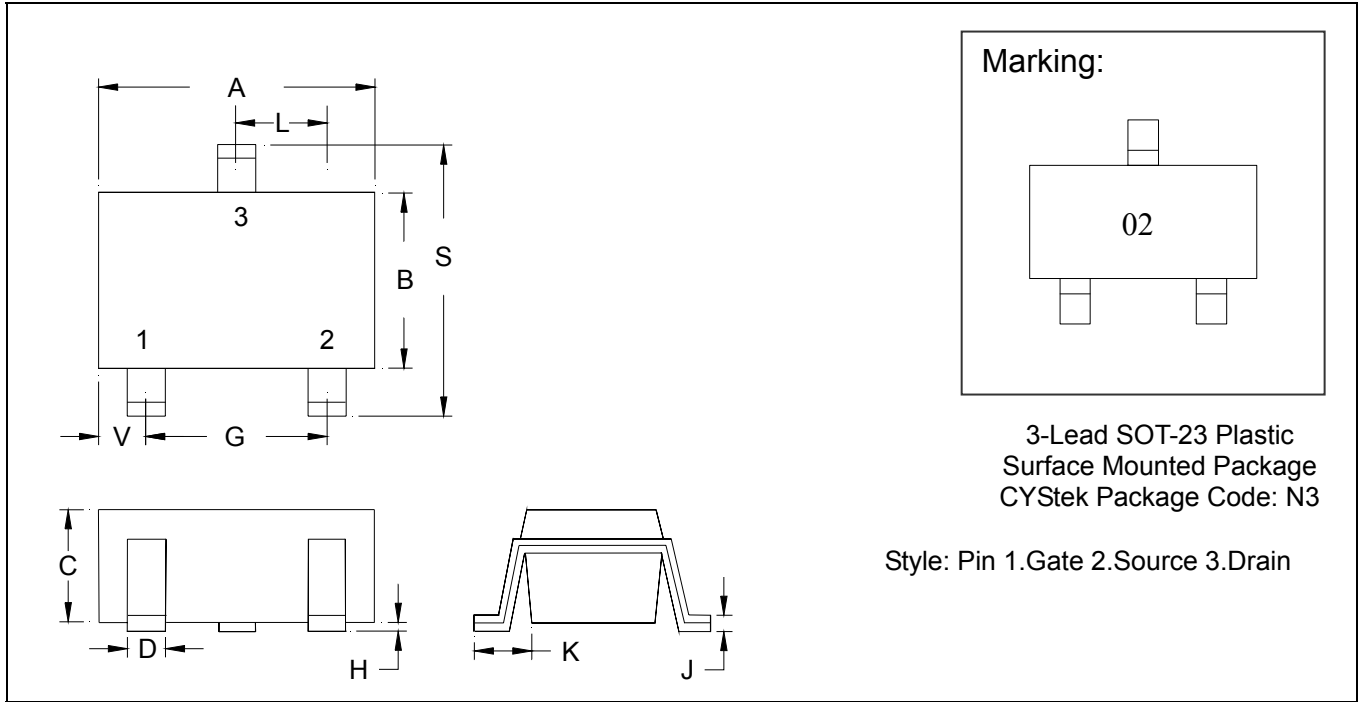
Source Drain Diode Forward Voltage



Transient Thermal Impedance



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:**
- Controlling dimension: millimeters.
 - Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
 - 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

Important Notice:

- All rights are reserved. Reproduction in whole or in part is prohibited without the prior written approval of CYStek.
- CYStek reserves the right to make changes to its products without notice.
- CYStek **semiconductor products are not warranted to be suitable for use in Life-Support Applications, or systems.**
- CYStek assumes no liability for any consequence of customer product design, infringement of patents, or application assistance.