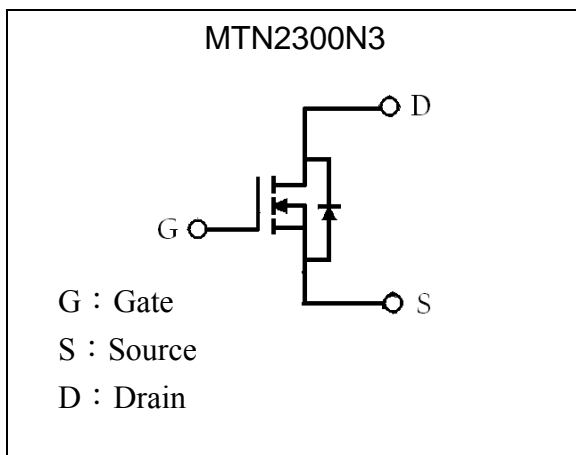
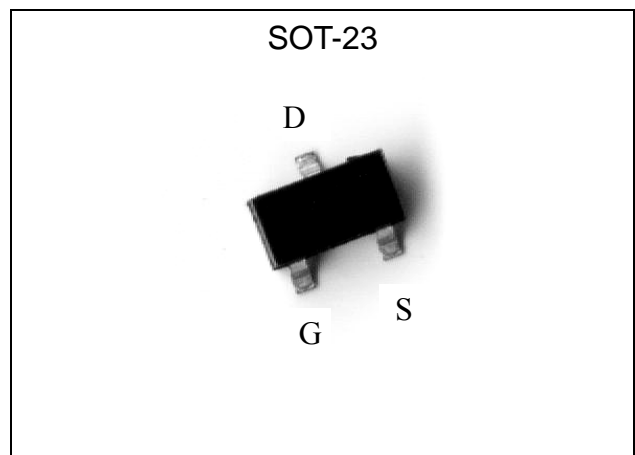


20V N-CHANNEL Enhancement Mode MOSFET

MTN2300N3

Features

- $V_{DS}=20V$
 $R_{DS(ON)}=28m\Omega @ V_{GS}=4.5V, I_{DS}=6A$
 $R_{DS(ON)}=38m\Omega @ V_{GS}=2.5V, I_{DS}=5.2A$
- Low on-resistance
- Capable of 2.5V gate drive
- Excellent thermal and electrical capabilities
- Compact and low profile SOT-23 package

Equivalent Circuit

Outline

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

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current @ $T_A=25^\circ C$ (Note 3)	I_D	6	A
Continuous Drain Current @ $T_A=70^\circ C$ (Note 3)	I_D	4.8	A
Pulsed Drain Current (Note 1, 2)	I_{DM}	20	A
Maximum Power Dissipation @ $T_A=25^\circ C$	P_D	1.25	W
Linear Derating Factor		0.01	W/ $^\circ C$
Thermal Resistance, Junction-to-Ambient	$R_{th,ja}$	100	$^\circ C/W$
Operating Junction and Storage Temperature	T_j, T_{stg}	-55~+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 FR-4 board, ≤ 10 sec.



Electrical Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	20	-	-	V	V _{GS} =0, I _D =250μA
ΔBV _{DSS} /ΔT _j	-	0.1	-	V/°C	Reference to 25°C, I _D =1mA
V _{GS(th)}	0.5	-	1.0	V	V _{DS} =V _{GS} , I _D =250μA
I _{GSS}	-	-	±100	nA	V _{GS} =±8V, V _{DS} =0
I _{DSS}	-	-	1	μA	V _{DS} =20V, V _{GS} =0
I _{DSS}	-	-	25	μA	V _{DS} =16V, V _{GS} =0, T _j =70°C
*R _{DS(ON)}	-	-	28	mΩ	I _D =6A, V _{GS} =4.5V
	-	-	38		I _D =5.2A, V _{GS} =2.5V
Dynamic					
C _{iss}	-	550	-	pF	V _{DS} =15V, V _{GS} =0, f=1MHz
C _{oss}	-	120	-		
C _{rss}	-	80	-		
t _{d(ON)}	-	8	-	ns	V _{DD} =10V, I _D =1A, V _{GS} =4.5V, R _G =0.2Ω
t _r	-	6	-		
t _{d(OFF)}	-	19	-		
t _f	-	7	-		
Q _g	-	10	-	nC	V _{DS} =10V, I _D =6A, V _{GS} =4.5V
Q _{gs}	-	3.6	-		
Q _{gd}	-	2	-		
Source-Drain Diode					
*V _{SD}	-	0.7	1.3	V	V _{GS} =0V, I _S =1.25A

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

Ordering Information

Device	Package	Shipping	Marking
MTN2300N3	SOT-23 (Pb-free)	3000 pcs / Tape & Reel	2300

Characteristic Curves

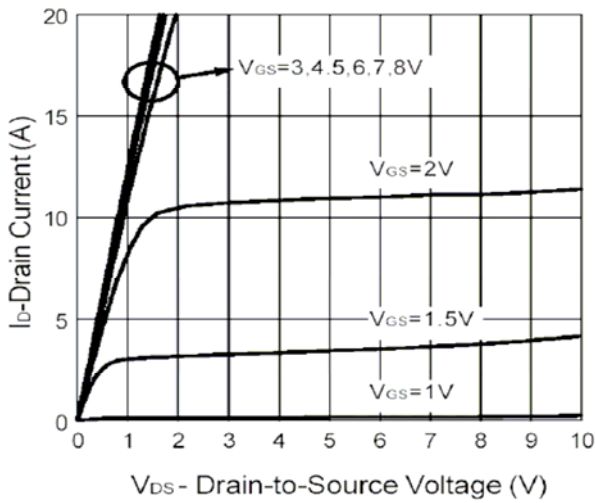


Fig 1. Typical Output Characteristics

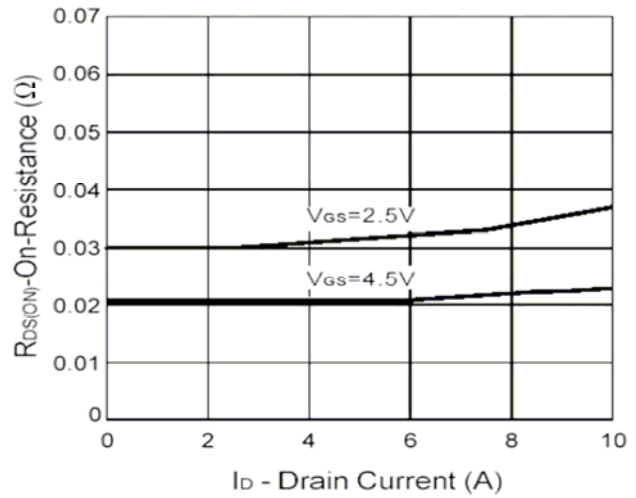


Fig 2. On-Resistance v.s. Drain Current

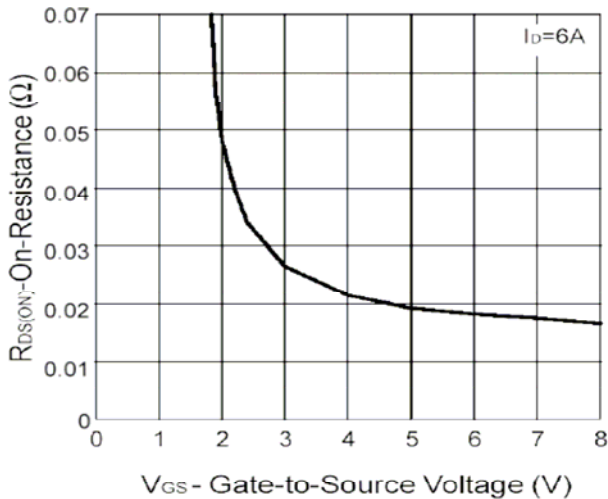


Fig 3. On-Resistance v.s. Gate Voltage

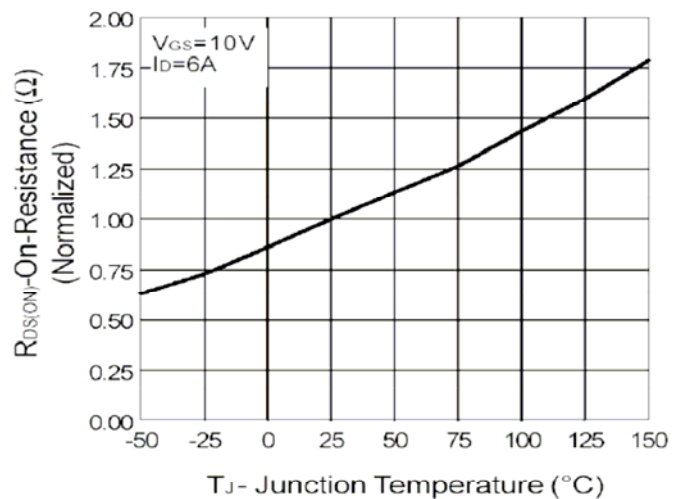


Fig 4. Normalized On-Resistance v.s. Junction Temperature

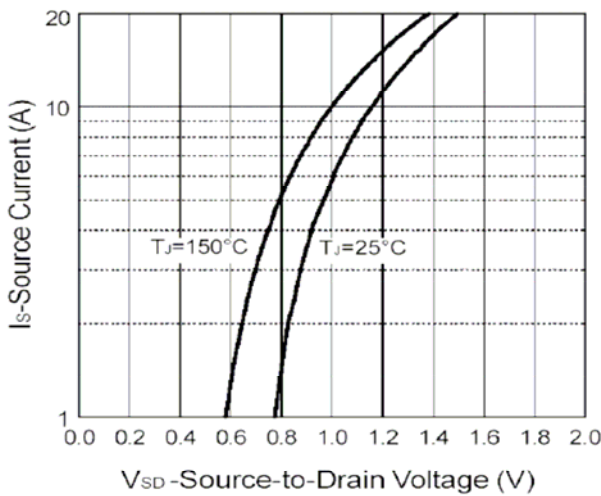


Fig 5. Source-Drain Diode Forward Voltage

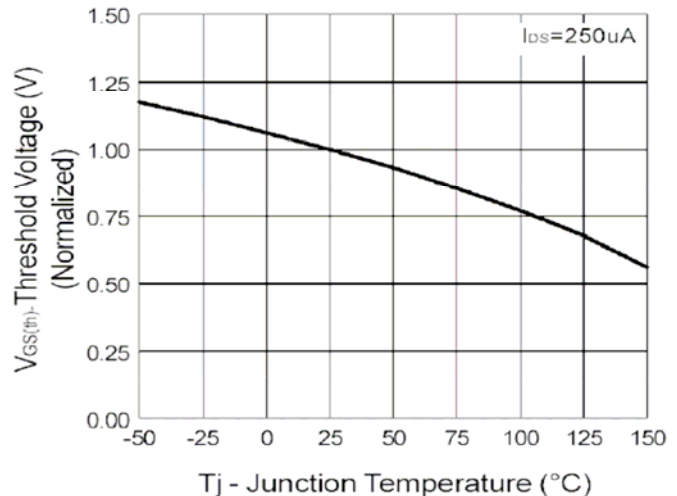


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

Characteristic Curves(Cont.)

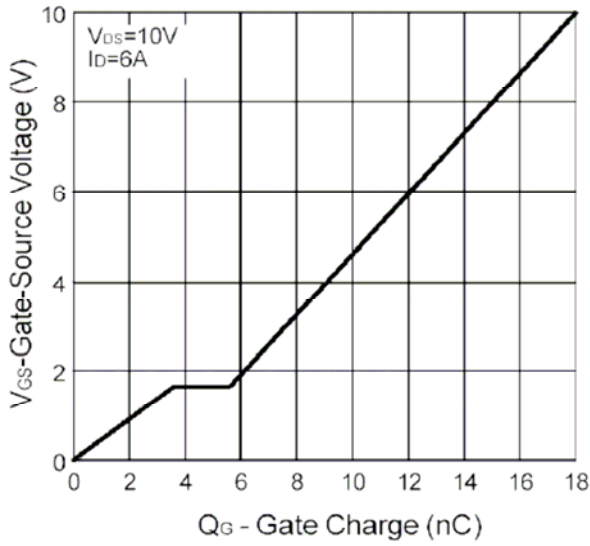


Fig 7. Gate Charge Characteristics

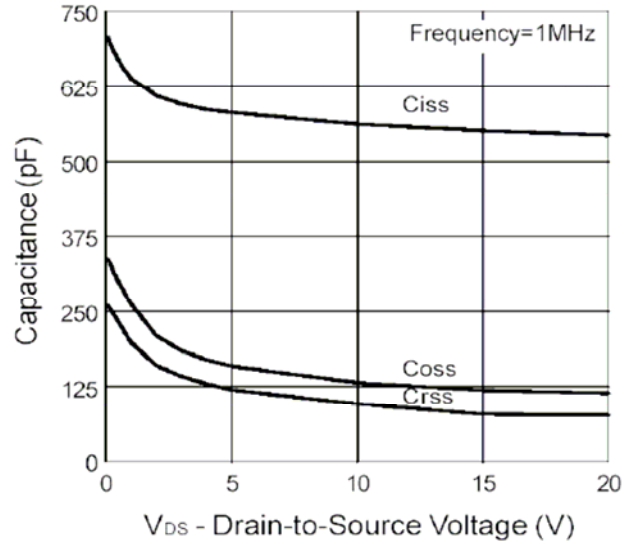


Fig 8. Typical Capacitance Characteristics

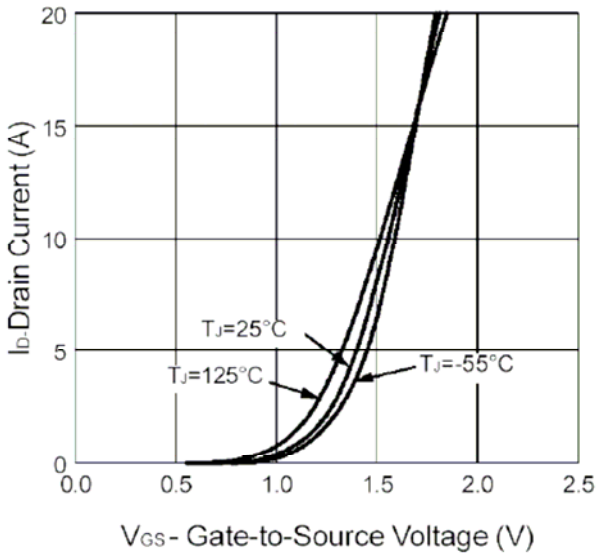


Fig 9. Transfer Characteristics

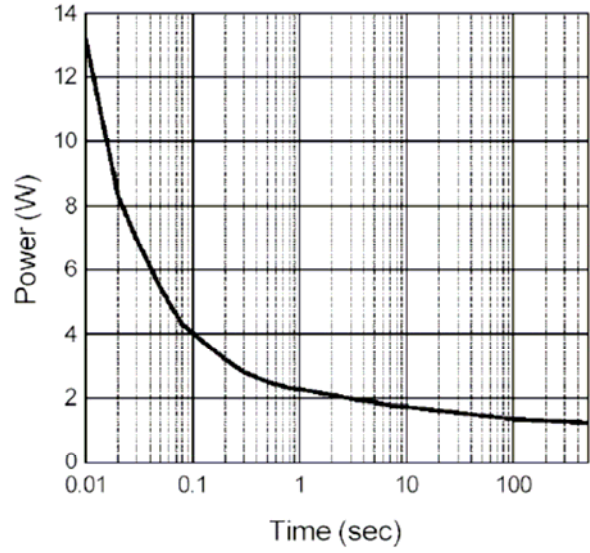


Fig 10. Single Pulse Power

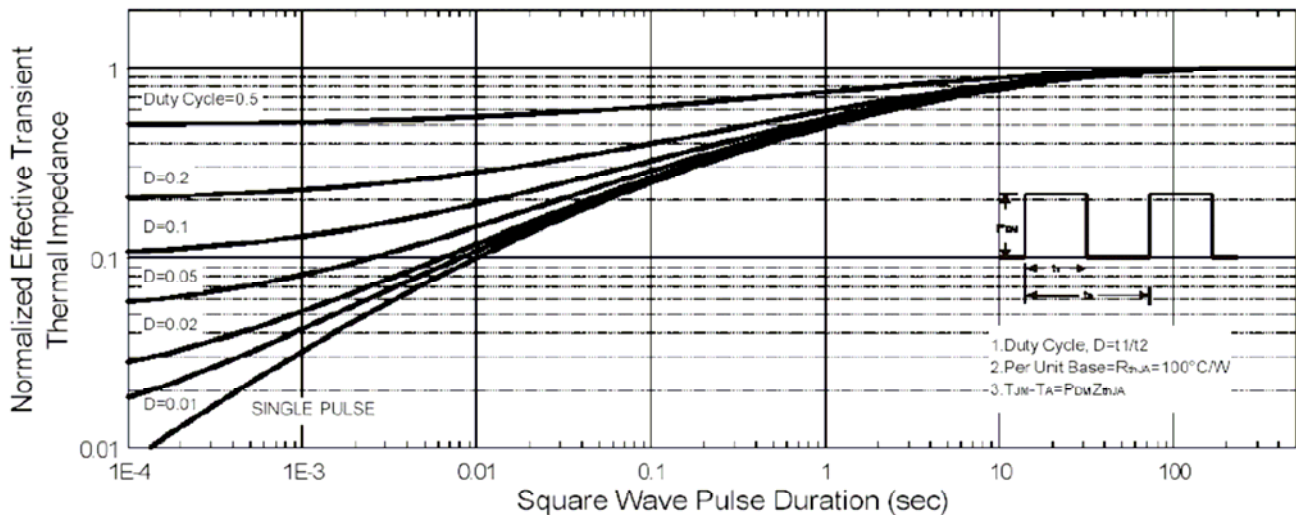
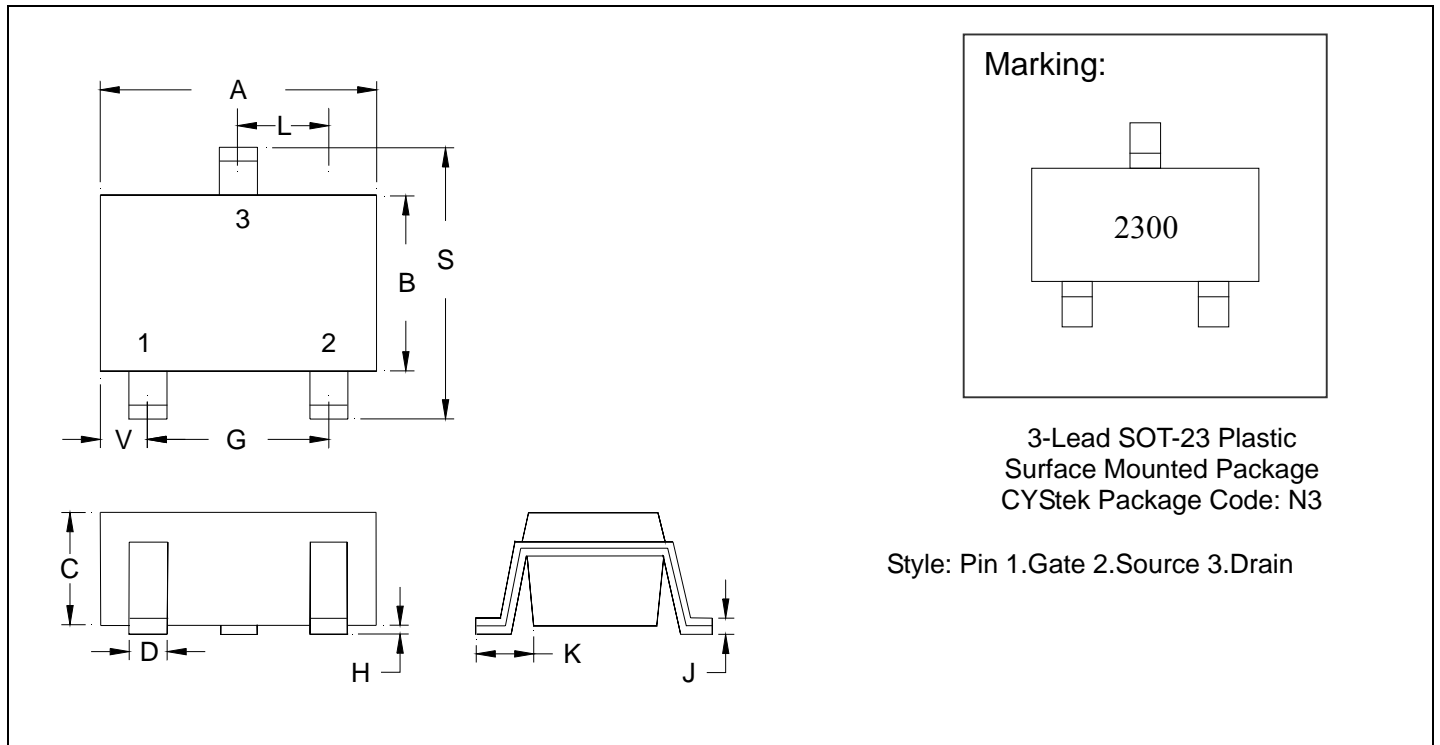


Fig 11. Normalized Thermal Transient Impedance, Junction to Ambient

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

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