WG2305

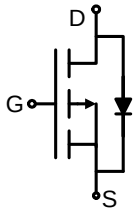
20V P-Channel MOSFET

Features:

- ☐ Low Intrinsic Capacitances.
- ☐ Excellent Switching Characteristics.
- ☐ Extended Safe Operating Area.
- ☐ Unrivalled Gate Charge :Qg=5.8nC (Typ.).
- ☐ BVDSS=-20V,ID=-4.5A
- ☐ RDS(on) : 65mΩ (Max) @VG=10V，I D=4.2A
- ☐ 100% Avalanche Tested

SOT-23

RoHS COMPLIANT



MARKING:A5HSB

Schematic diagram

Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current	T_C =25℃	I_D	-4.5	A
	T_C =70℃		-3.2	
Drain Current -Pulsed (Note 1)		I_{DM}	-15	A
Maximum Power Dissipation		P_D	1.7	W
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55 To 150	℃

Thermal Characteristic

Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$	74	℃/W

Electrical Characteristics (T_A=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=-250μA	-20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V,V_{GS}=0V	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±12V,V_{DS}=0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-0.45	-0.7	-1.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-4.2A	-	52	65	mΩ
		V_{GS}=-4.5V, I_D=-3A	-	65	75	
Forward Transconductance	g_{FS}	V_{DS}=-5V,I_D=-4.5A	-	6	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=-4V,V_{GS}=0V, F=1.0MHz	-	415	-	PF
Output Capacitance	C_{oss}		-	223	-	PF
Reverse Transfer Capacitance	C_{rss}		-	87	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-4V, ,R_L=-1.2Ω, V_{GEN}=-4.5V,R_g=1Ω	-	12	-	nS
Turn-on Rise Time	t_r		-	35	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	30	-	nS
Turn-Off Fall Time	t_f		-	10	-	nS
Total Gate Charge	Q_g	V_{DS}=-4V,I_D=-4.5A,V_{GS}=-4.5V	-	5.8	-	nC
Gate-Source Charge	Q_{gs}		-	0.85	-	nC
Gate-Drain Charge	Q_{gd}		-	1.7	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=-4.5A	-	-	-1.2	V
Diode Forward Current (Note 2)	I_S		-	-	-4.1	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

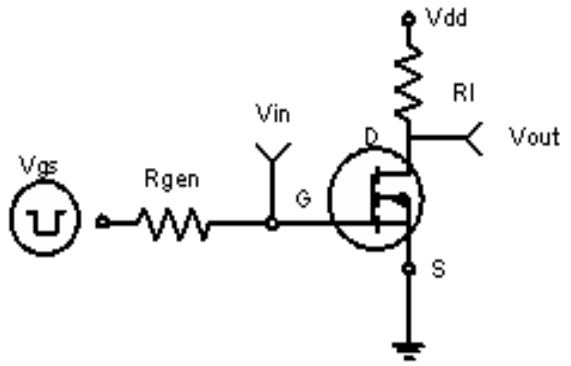


Figure 1:Switching Test Circuit

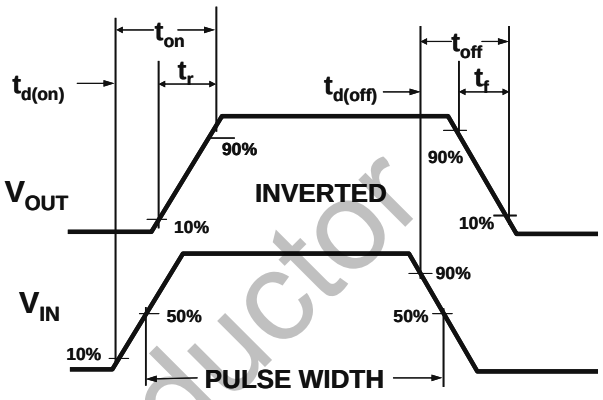


Figure 2:Switching Waveforms

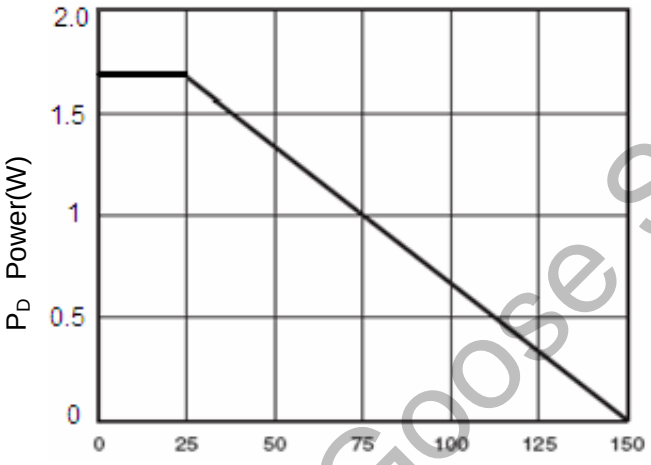


Figure 3 Power Dissipation

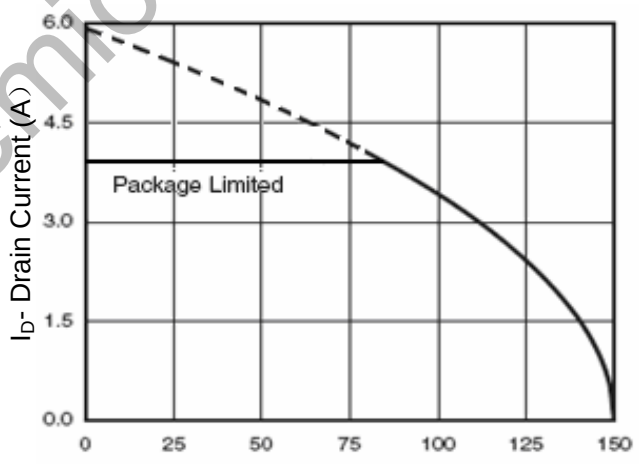


Figure 4 Drain Current

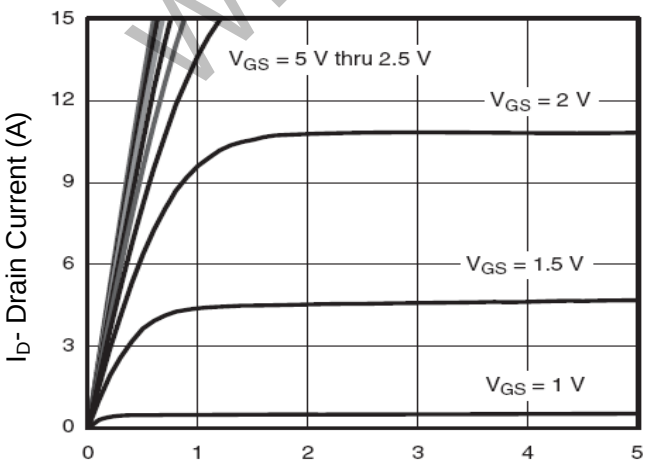


Figure 5 Output Characteristics

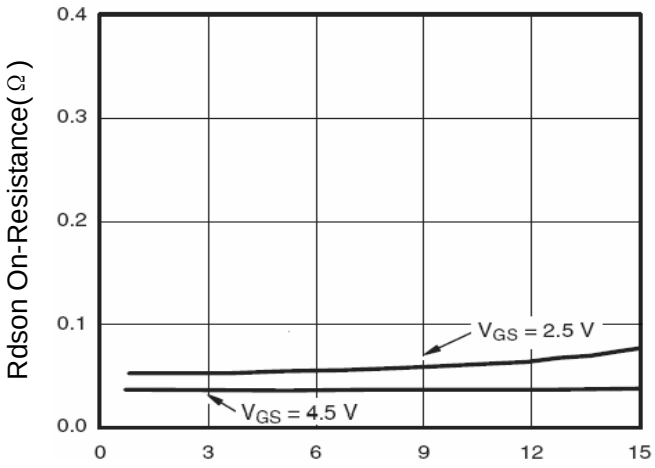


Figure 6 Drain-Source On-Resistance

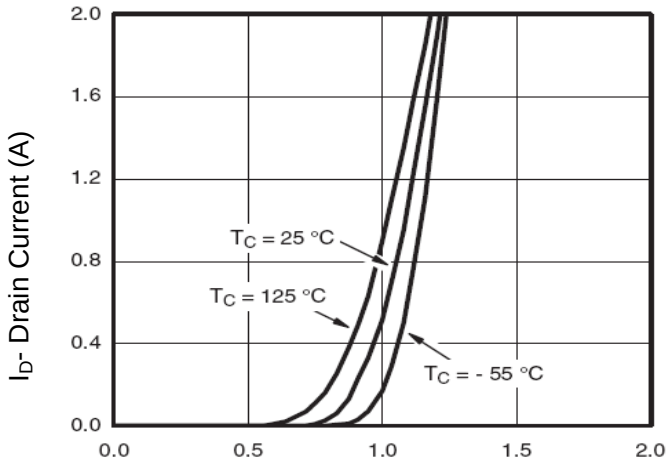


Figure 7 Transfer Characteristics

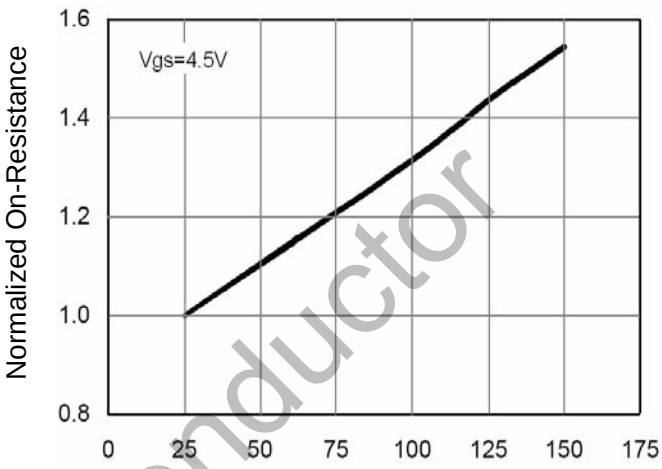


Figure 8 Drain-Source On-Resistance

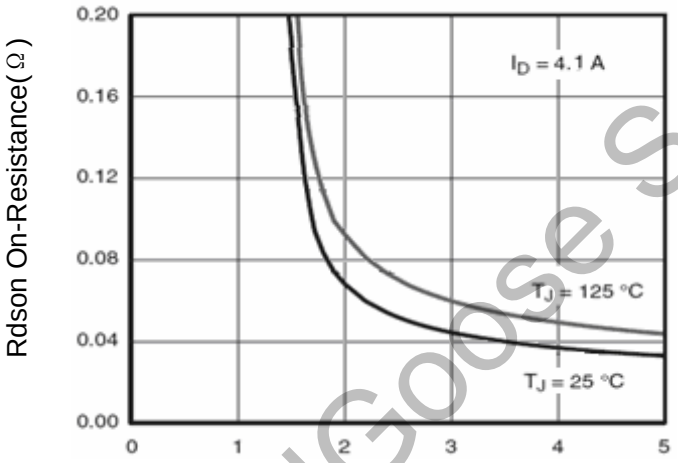


Figure 9 Rdson vs Vgs

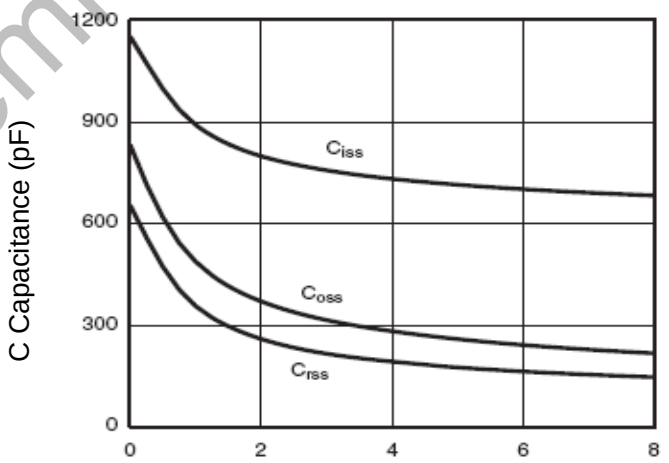


Figure 10 Capacitance vs Vds

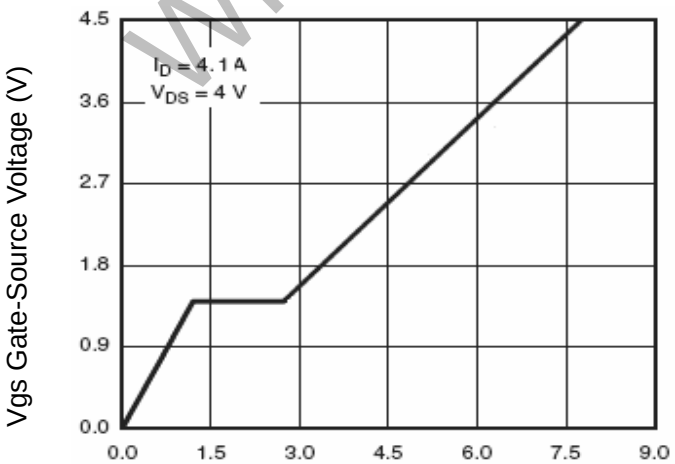


Figure 11 Gate Charge

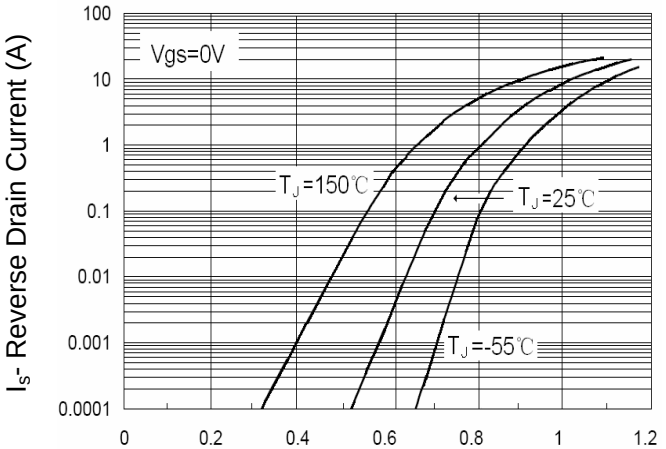


Figure 12 Source- Drain Diode Forward

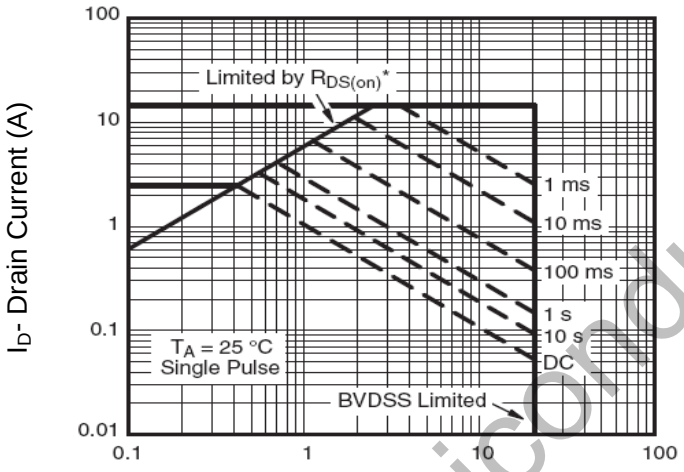


Figure 13 Safe Operation Area

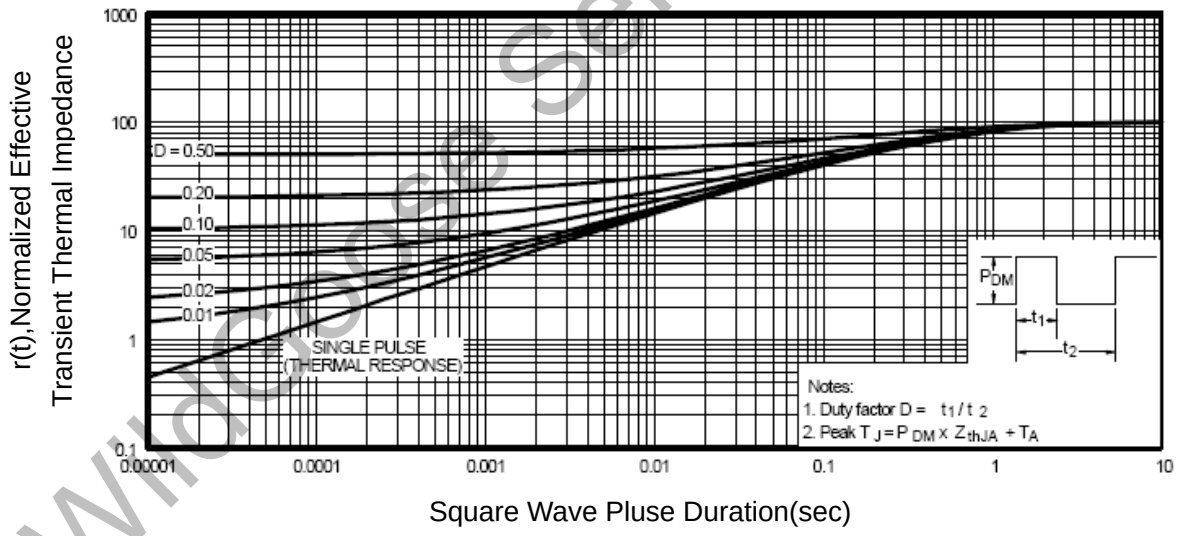


Figure 14 Normalized Maximum Transient Thermal Impedance