

AP2310

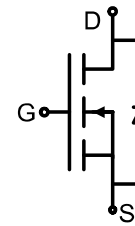
N-Channel Enhancement Mosfet

Feature

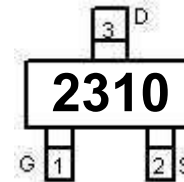
- 60V,3A
 $R_{DS(ON)} < 80m\Omega @ V_{GS}=10V$ TYP=55 m Ω
 $R_{DS(ON)} < 90m\Omega @ V_{GS}=4.5V$ TYP=70m Ω
- Advanced Trench Technology
- Lead free product is acquired

Application

- Interfacing Switching
- Load Switching
- Power management



Schematic Diagram



Marking and Pin Assignment



SOT-23 -3L Top View

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
2310	AP2310	Sot-23-3	7 inch	-	3000

ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_a = 25^{\circ}C$)	I_D	3	A
Continuous Drain Current ($T_a = 70^{\circ}C$)	I_D	2.3	A
Pulsed Drain Current	I_{DM}	12	A
Power Dissipation	P_D	1.68	W
Thermal Resistance from Junction to Ambient ⁽⁴⁾	$R_{\theta JA}$	90	$^{\circ}C/W$
Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~ +150	$^{\circ}C$

MOSFET ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0V$	-	-	1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
Gate threshold voltage ⁽³⁾	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.2	1.7	2.5	V
Drain-source on-resistance ⁽³⁾	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 3A$	-	55	80	m Ω
		$V_{GS} = 4.5V, I_D = 2A$	-	75	90	
Dynamic characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$	-	460	-	pF
Output Capacitance	C_{oss}		-	35	-	
Reverse Transfer Capacitance	C_{rss}		-	30	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 30V, I_D = 1A,$ $V_{GS} = 10V, R_G = 3.3\Omega$	-	5	-	ns
Turn-on rise time	t_r		-	6	-	
Turn-off delay time	$t_{d(off)}$		-	17	-	
Turn-off fall time	t_f		-	3.5	-	
Total Gate Charge	Q_g	$V_{DS} = 30V, I_D = 3A,$ $V_{GS} = 4.5V$	-	6	-	nC
Gate-Source Charge	Q_{gs}		-	1.5	-	
Gate-Drain Charge	Q_{gd}		-	3.5	-	
Source-Drain Diode characteristics						
Diode Forward voltage ⁽³⁾	V_{DS}	$V_{GS} = 0V, I_S = 3A$	-	-	1.2	V
Diode Forward current ⁽⁴⁾	I_S		-	-	3.0	A

Notes:

1. Repetitive Rating: pulse width limited by maximum junction temperature
2. Pulse Test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. Surface Mounted on FR4 Board, $t_s \leq 10$ sec

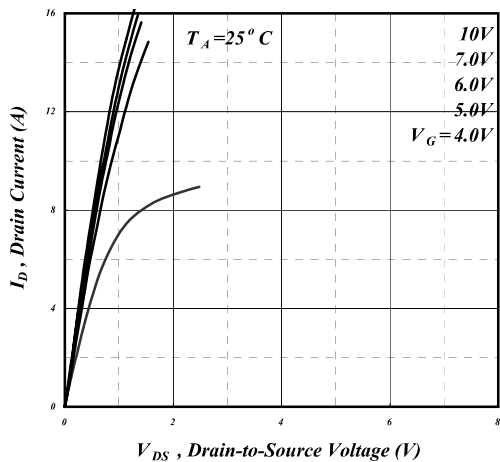


Fig 1. Typical Output Characteristics

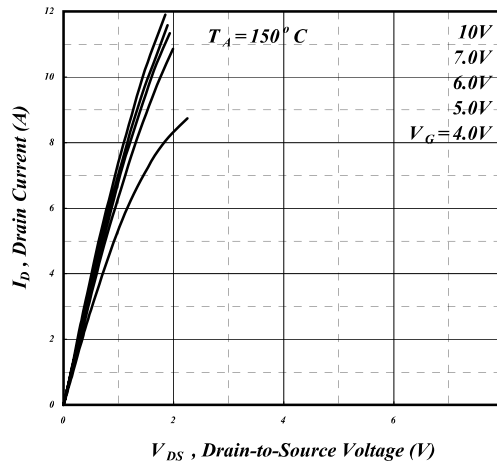


Fig 2. Typical Output Characteristics

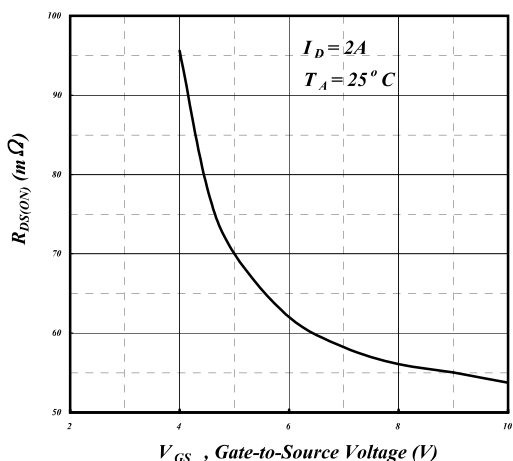


Fig 3. On-Resistance v.s. Gate Voltage

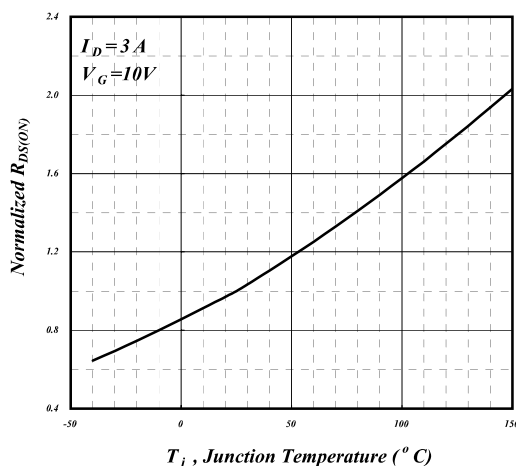


Fig 4. Normalized On-Resistance v.s. Junction Temperature

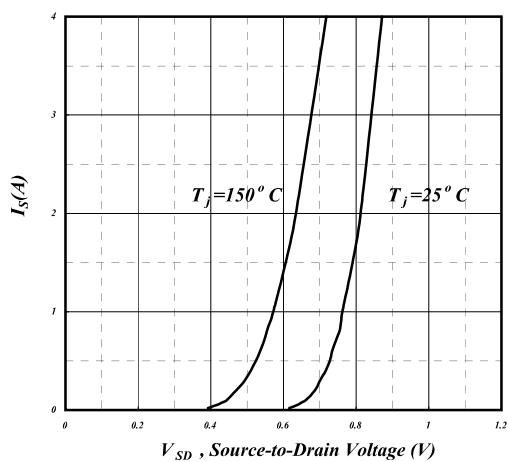


Fig 5. Forward Characteristic of Reverse Diode

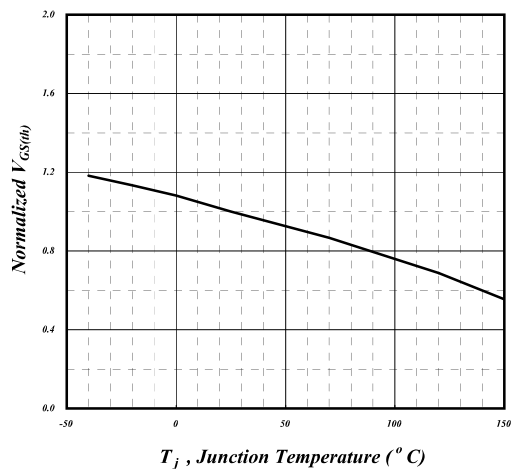


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

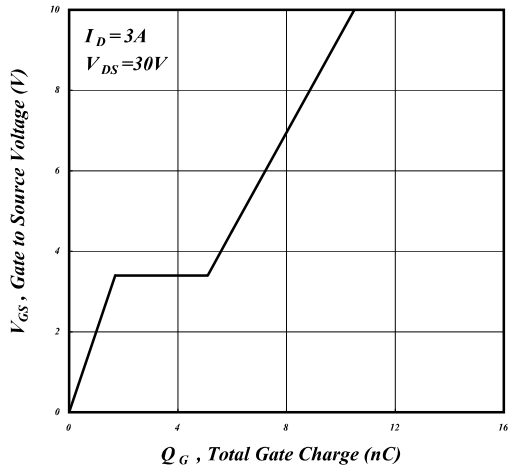


Fig 7. Gate Charge Characteristics

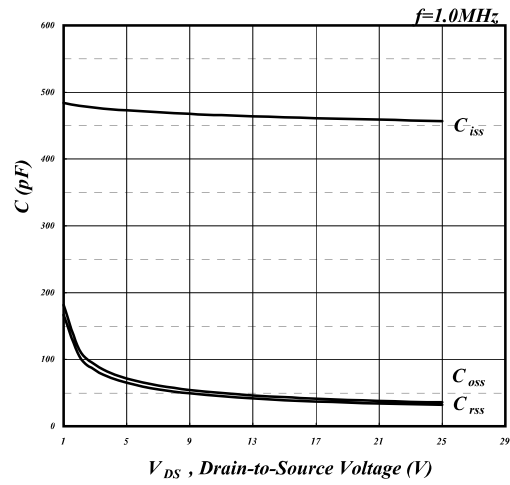


Fig 8. Typical Capacitance Characteristics

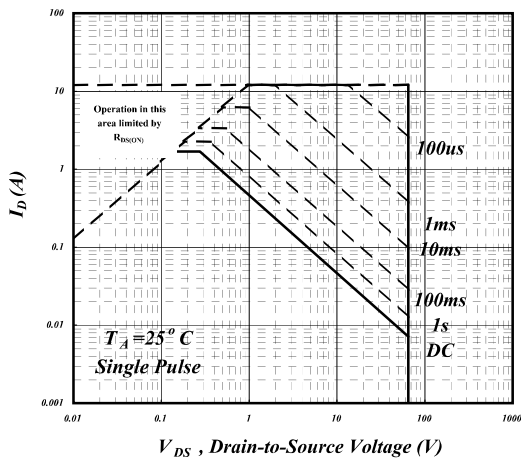


Fig 9. Maximum Safe Operating Area

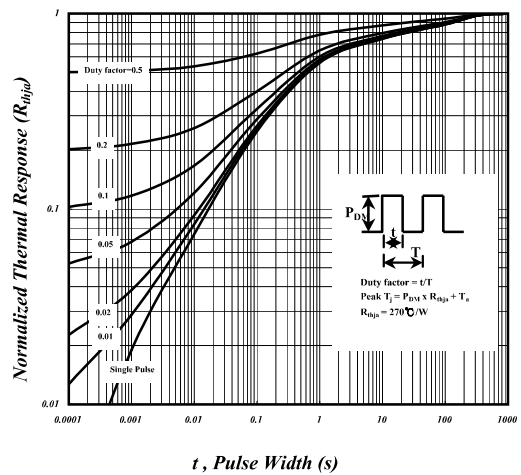


Fig 10. Effective Transient Thermal Impedance

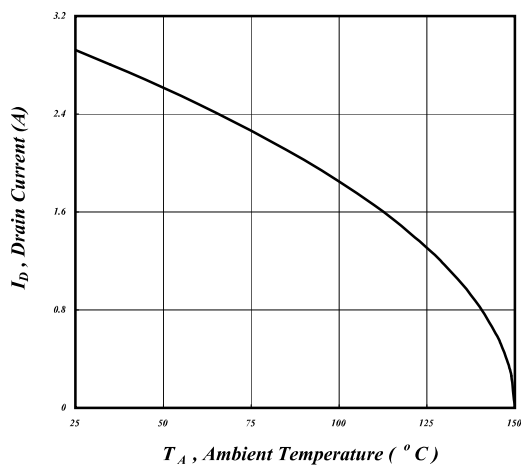


Fig 11. Maximum Continuous Drain Current v.s. Ambient Temperature

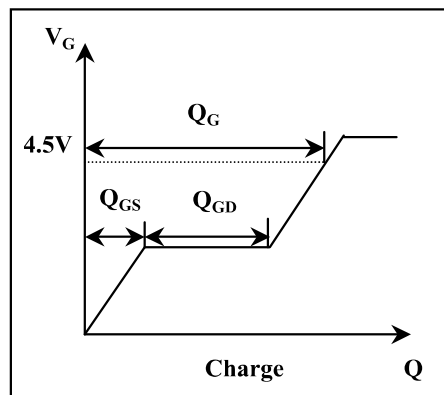


Fig 12. Gate Charge Waveform

SOT-23-3 Package Information

