CAN CIRCLE SEMI

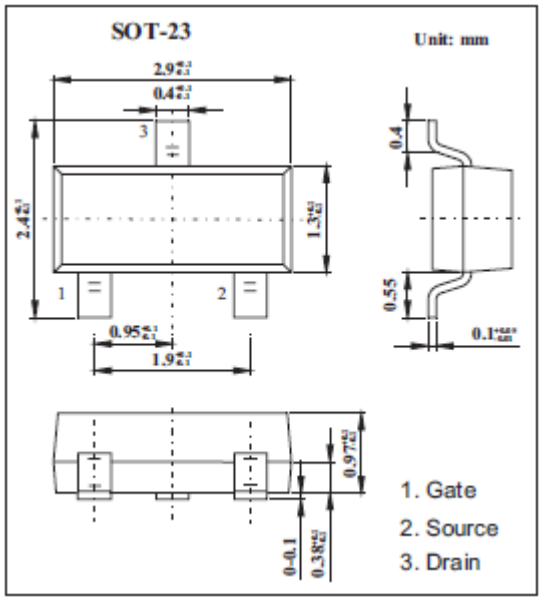
MOSFET

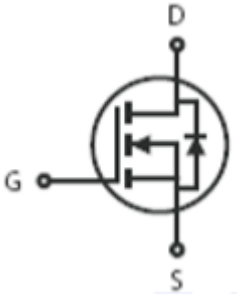
N-Channel Power MOSFET

SI2310

■ Features

- ◆ Simple Drive Requirement
- ◆ Small Package Outline
- ◆ Surface Mount Device





■ Absolute Maximum Ratings Ta=25℃

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Drain-Current -Continuous T_A=25℃	I_D	3	A
T_A=70℃		2.3	
Pulsed Drain Current *	I_{DM}	10	
Power Dissipation*	P_D	1.25	W
Thermal Resistance, Junction-to-Ambient	R_{thJA}	100	℃/W
Operating Junction and Storage Temperature Range	T_j.T_{stg}	-55 to 150	℃

* 2.Pulse width ≤300us , duty cycle≤ 2%

■ Electrical Characteristics Ta=25℃

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	V_{GS}=0V,I_D=250uA	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V			10	uA
Gate-Body Leakage	I_{GSS}	V_{GS}=±20V,V_{DS}=0V			±100	nA
Gate Threshold Voltage*	V_{GS}(th)	V_{GS}=VDS,I_D=250uA	1		3	V
Drain-Source On-state Resistance*	$R_{DS(ON)}$	V_{GS}=10V,I_D=3A			90	mΩ
		V_{GS}=4.5V,I_D=2A			120	mΩ
Forward Transconductance*	gFS	V_{DS}=4.5V,I_D=3A		5		S
Input Capacitance	C_{ISS}	V_{DS}=25V,V_{GS}=0V, f=1.0MHz		490	780	pF
Output Capacitance	C_{OSS}			55		
Reverse Transfer Capacitance	C_{RSS}			40		
Turn-On Delay Time	$t_{D(on)}$	V_{GS}=10V,VDS=30V, I_D=1A,RL=30Ω, VGEN=3.3Ω		6		ns
Rise Time	tr			5		
Turn-Off Delay Time	$t_{D(off)}$			16		
Fall Time	tr			3		
Total Gate Charge	Qg	V_{DS}=48V,I_D=3A, V_{GS}=4.5V		6	10	nC
Gate-Source Charge	Qgs			1.6		
Gate-Drain Charge	Qgd			3		
Body Diode Reverse Recovery Time	Trr	Is=3A,dl/dt=100A/us		25		nC
Diode Forward Voltage	V_{SD}	V_{GS}=0V,Is=1.2A			1.2	V

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

■ Electrical Characteristics Ta=25℃

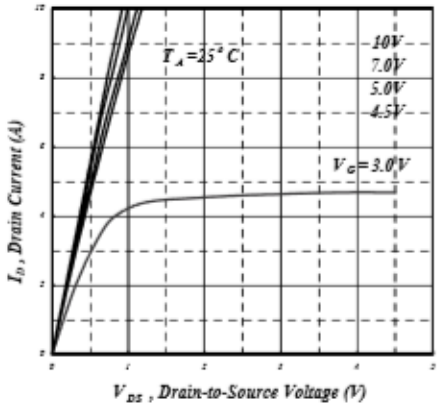


Fig 1. Typical Output Characteristics

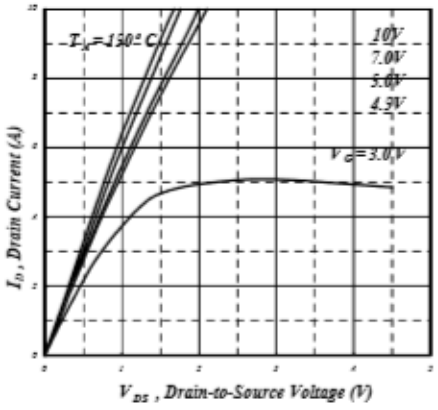


Fig 2. Typical Output Characteristics

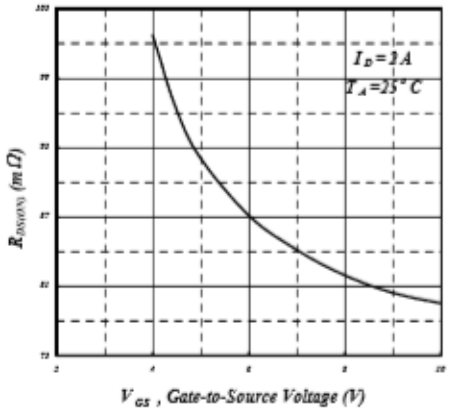


Fig 3. On-Resistance v.s. Gate Voltage

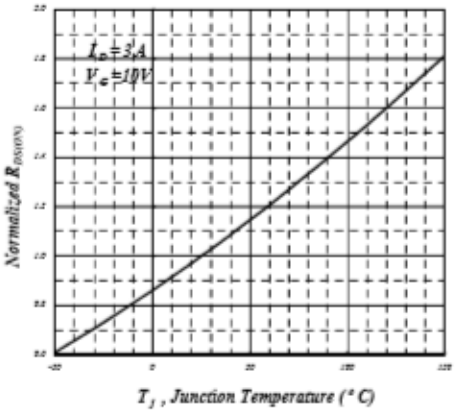


Fig 4. Normalized On-Resistance v.s. Junction Temperature

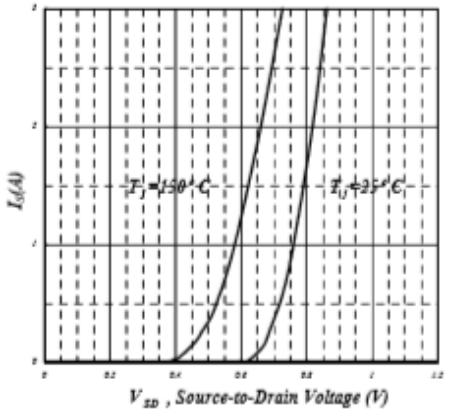


Fig 5. Forward Characteristic of Reverse Diode

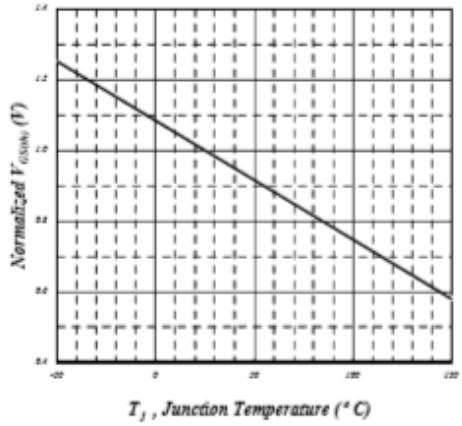


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

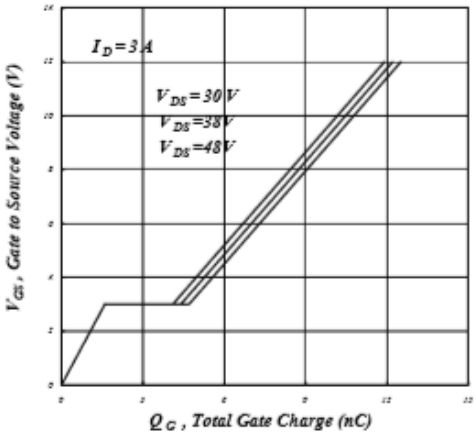


Fig 7. Gate Charge Characteristics

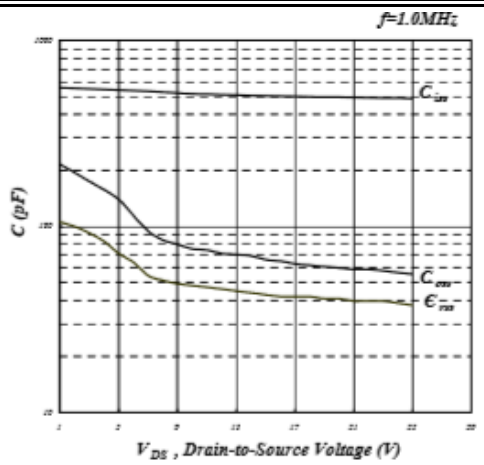


Fig 8. Typical Capacitance Characteristics

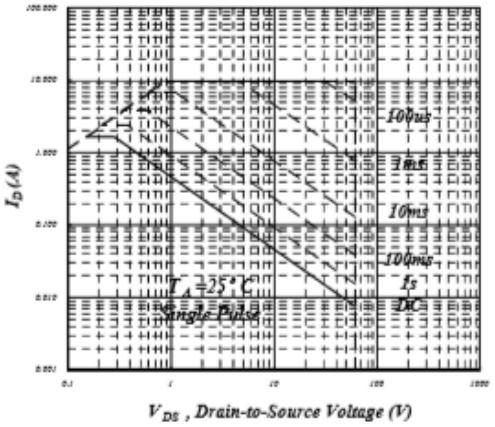


Fig 9. Maximum Safe Operating Area

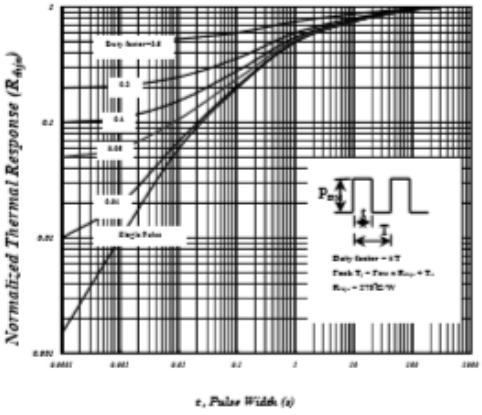


Fig 10. Effective Transient Thermal Impedance