

FEATURES

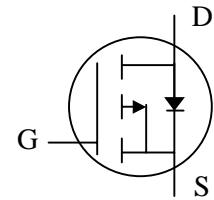
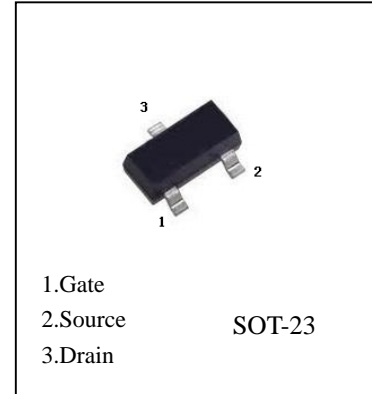
- High dense cell design for extremely low  $R_{DS(ON)}$
- Rugged and reliable
- Case Material: Molded Plastic.

Absolute Maximum Ratings (TA=25°C, unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V <sub>DS</sub>	-30	V
Gate-source Voltage	V <sub>GS</sub>	±12	V
Drain Current (Continuous)	I <sub>D</sub>	-3.2	A
Drain Current (Pulsed) <sup>a</sup>	I <sub>DM</sub>	-10	A
Total Power Dissipation @TA=25oC	P <sub>D</sub>	1.38	W
Operating Junction and Storage Temperature Range	T <sub>j</sub> , T <sub>stg</sub>	-55 to +150	°C
Thermal Resistance Junction to Ambient (PCB mounted) <sup>b</sup>	R <sub>JA</sub>	90	°C/W

SI2305

P-Channel MOSFET



Electrical Characteristics (TA=25°C, unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
B <sub>V</sub> D <sub>SS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	-30	-	-	V
B <sub>V</sub> D <sub>SS</sub> / T <sub>j</sub>	Breakdown Voltage Temperature Coefficient	Reference to 25°C, I <sub>D</sub> =-1mA	-	-0.1	-	V/°C
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =-10V, I <sub>D</sub> =-3.2A	-	-	60	m
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-3.0A	-	-	80	m
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-2.0A	-	-	150	m
		V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-1.0A	-	-	250	m
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-0.5	-	-1.2	V
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =-5V, I <sub>D</sub> =-3.0A	-	9	-	S
I <sub>DSS</sub>	Drain-Source Leakage Current (T <sub>j</sub> =25°C)	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V	-	-	-1	uA
	Drain-Source Leakage Current (T <sub>j</sub> =70°C)	V <sub>DS</sub> =-24V, V <sub>GS</sub> =0V	-	-	-25	uA
I <sub>GSS</sub>	Gate-Source Leakage	V <sub>GS</sub> = ± 12V	-	-	±100	nA
Q <sub>g</sub>	Total Gate Charge	I <sub>D</sub> =-3.2A	-	10	18	nC
Q <sub>gs</sub>	Gate-Source Charge	V <sub>DS</sub> =-24V	-	1.8	-	nC
Q <sub>gd</sub>	Gate-Drain ("Miller") Charge	V <sub>GS</sub> =-4.5V	-	3.6	-	nC
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DS</sub> =-15V	-	7	-	ns
t <sub>r</sub>	Rise Time	I <sub>D</sub> =-3.2A	-	15	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time	R <sub>G</sub> =3.3, V <sub>GS</sub> =-10V	-	21	-	ns
t <sub>f</sub>	Fall Time	R <sub>D</sub> =4.6	-	15	-	ns
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V V <sub>DS</sub> =-25V f=1.0MHz	-	735	1325	pF
C <sub>oss</sub>	Output Capacitance		-	100	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	80	-	pF

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V <sub>SD</sub>	Forward On Voltage	I <sub>S</sub> =-1.2A, V <sub>GS</sub> =0V	-	-	-1.2	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>S</sub> =-3.2A, V <sub>GS</sub> =0V,	-	24	-	ns
Q <sub>rr</sub>	Reverse Recovery Charge	dI/dt=100A/μs	-	19	-	nC

a.Repetitive Rating : Pulse width limited by maximum junction temperature.  
 b.Surface Mounted on FR4 Board,t<10 sec.

### SI2305 Typical Characteristics

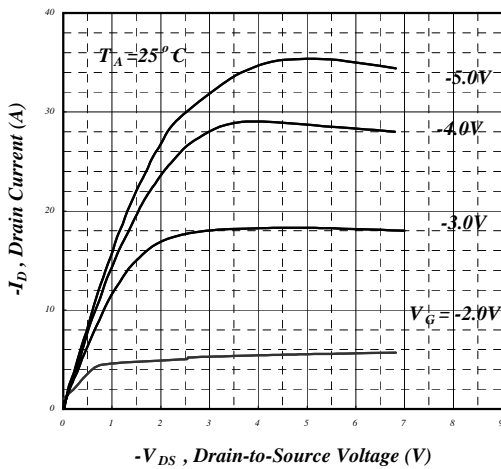


Fig 1. Typical Output Characteristics

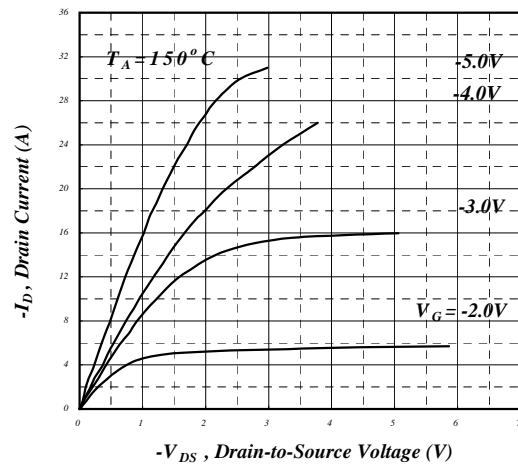


Fig 2. Typical Output Characteristics

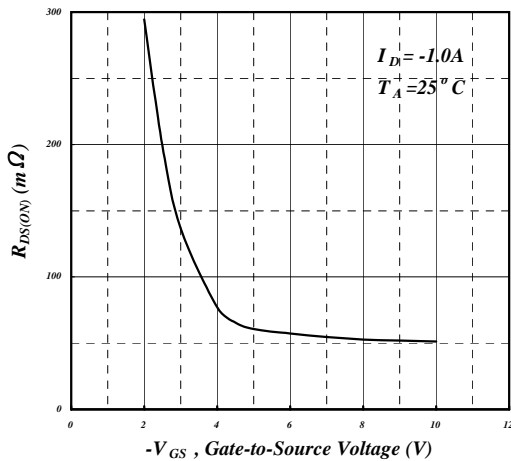


Fig 3. On-Resistance v.s. Gate Voltage

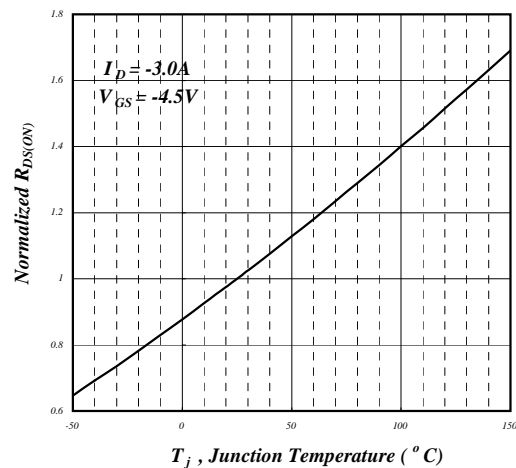


Fig 4. Normalized On-Resistance v.s. Junction Temperature

SI2305 Typical Characteristics

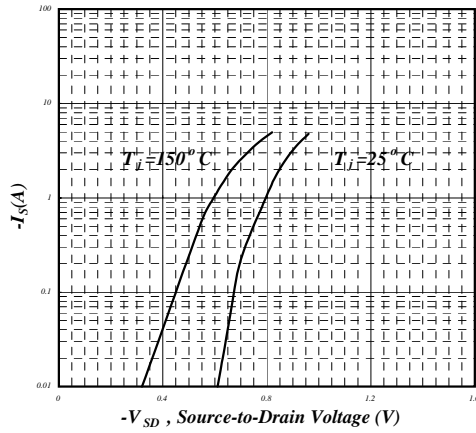


Fig 5. Forward Characteristic of Reverse Diode

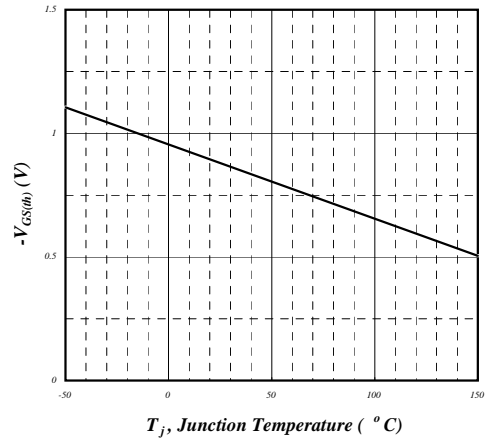


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

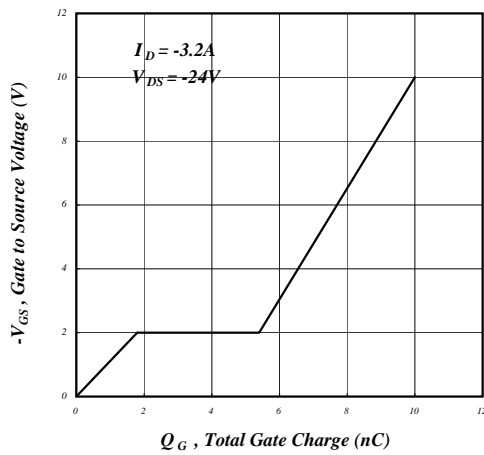


Fig 7. Gate Charge Characteristics

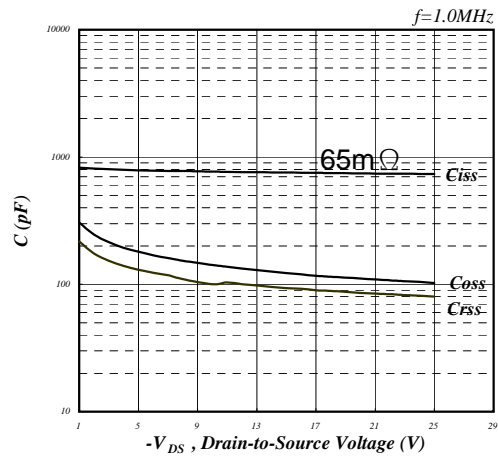


Fig 8. Typical Capacitance Characteristics

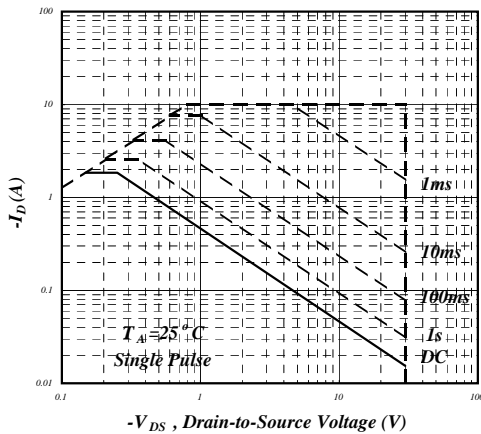


Fig 9. Maximum Safe Operating Area

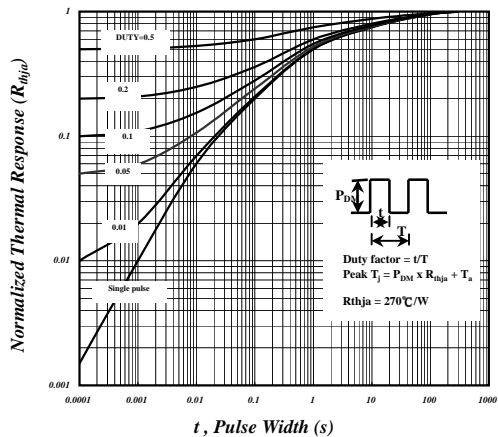


Fig 10. Effective Transient Thermal Impedance