

VDS= -20V

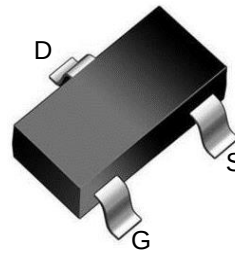
RDS(ON), Vgs@-4.5V, Ids@-3.2A < 68m Ω

RDS(ON), Vgs@-2.5V, Ids@-2.0A < 85m Ω

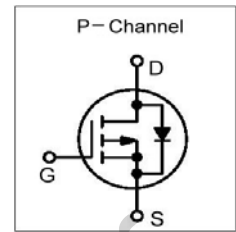
Features

Advanced trench process technology

High Density Cell Design For Ultra Low On-Resistance



SOT-23 top view



Schematic diagram

Maximum Ratings and Thermal Characteristics (TA = 25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	-20	V
Gate-Source Voltage	V _{GS}	±12	
Continuous Drain Current	I _D	-3	A
Pulsed Drain Current ¹⁾	I _{DM}	-10	
Maximum Power Dissipation ²⁾	P _D	TA = 25°C	W
		TA = 75°C	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 150	°C
Junction-to-Ambient Thermal Resistance (PCB mounted) ²⁾	R _{thJA}	100	°C/W
Junction-to-Ambient Thermal Resistance (PCB mounted) ³⁾		166	

Notes

¹⁾ Pulse width limited by maximum junction temperature.

²⁾ Surface Mounted on FR4 Board, t ≤ 5 sec.

³⁾ Surface Mounted on FR4 Board.

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = -250uA	-20			V
Drain-Source On-State Resistance ¹⁾	R _{DS(on)}	V _{GS} = -4.5V, I _D = -3.0A		64	110	mΩ
		V _{GS} = -2.5V, I _D = -2.0A		89	140	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = -250uA	0.4		1	V
Zero Gate Voltage Drain Current 0	I _{DSS}	V _{DS} = -20V, V _{GS} = 0V			-1	uA
		V _{DS} = -16V, V _{GS} = 0V TJ=55°C			-10	
Gate Body Leakage	I _{GSS}	V _{GS} = ± 10V, V _{DS} = 0V			±100	nA
Forward Transconductance ¹⁾	g _{fs}	V _{DS} = -5V, I _D = -2.8A		6.5	—	S
Dynamic						
Total Gate Charge	Q _g	V _{DS} = -6V, I _D ≅ -2.3A V _{GS} = -4.5V		5.8	10	nC
Gate-Source Charge	Q _{gs}			0.85		
Gate-Drain Charge	Q _{gd}			1.7		
Turn-On Delay Time	t _{d(on)}	V _{DD} = -6V, RL=6Ω I _D ≅ -1.A, V _{GEN} = -4.5V R _G = 6Ω		13	25	ns
Turn-On Rise Time	t _r			36	60	
Turn-Off Delay Time	t _{d(off)}			42	70	
Turn-Off Fall Time	t _f			34	60	
Input Capacitance	C _{iss}	V _{DS} = -6V, V _{GS} = 0V f = 1.0 MHz		415		pF
Output Capacitance	C _{oss}			223		
Reverse Transfer Capacitance	C _{rss}			87		
Source-Drain Diode						
Max. Diode Forward Current	I _S				-1.6	A
Diode Forward Voltage	V _{SD}	I _S = -1.0A, V _{GS} = 0V		-0.8	-1.2	V

¹⁾ Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

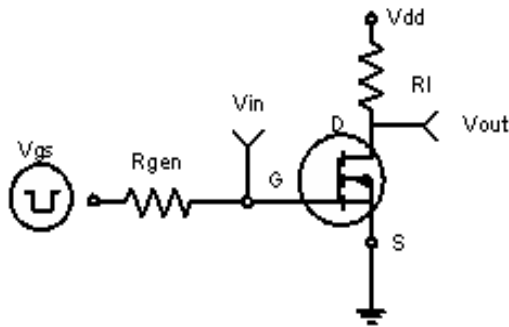


Figure 1: Switching Test Circuit

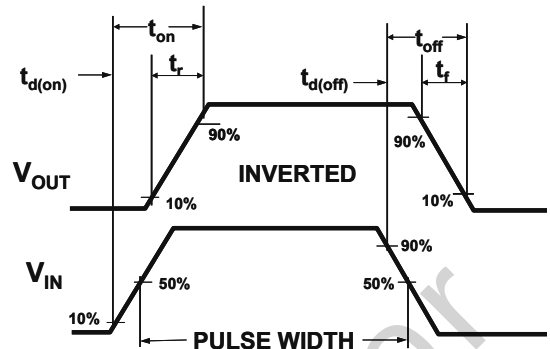


Figure 2: Switching Waveforms

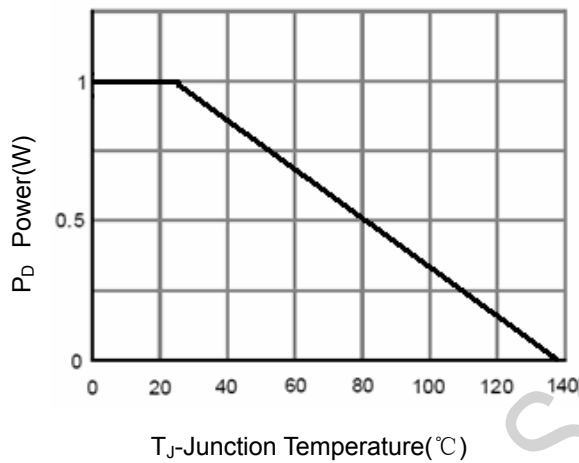


Figure 3 Power Dissipation

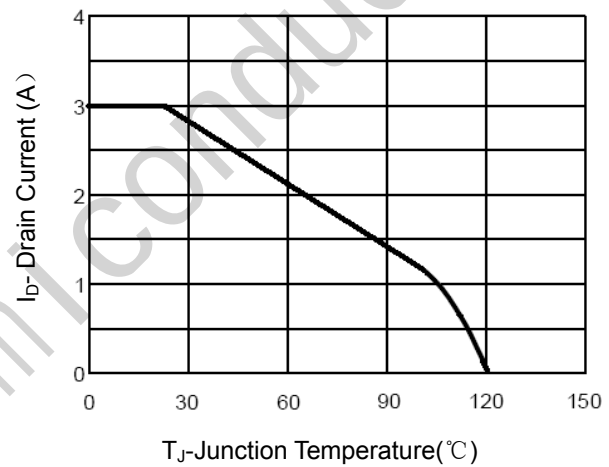


Figure 4 Drain Current

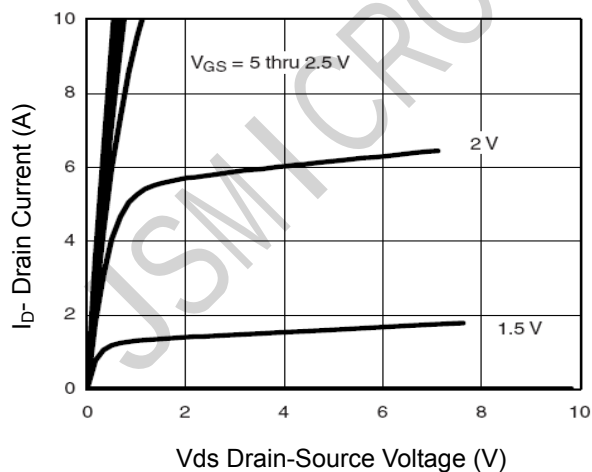


Figure 5 Output CHARACTERISTICS

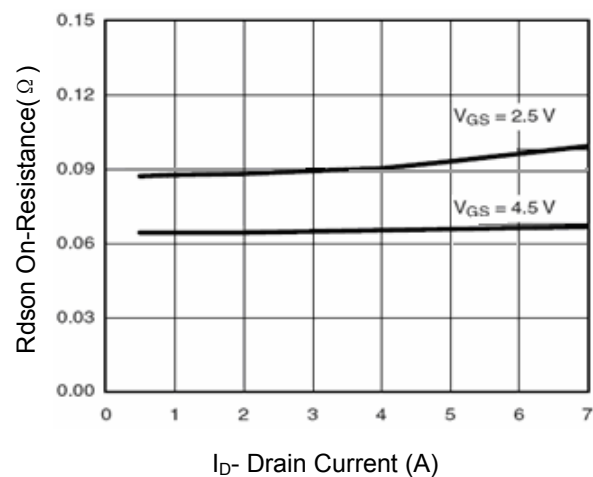
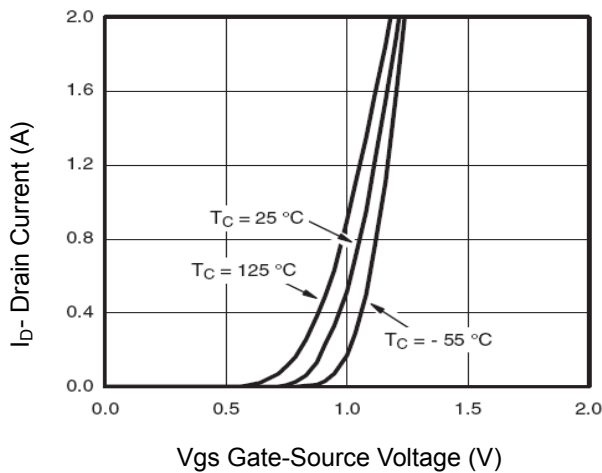
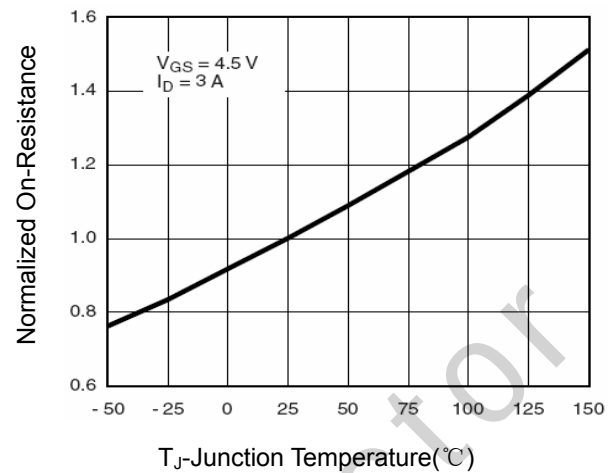
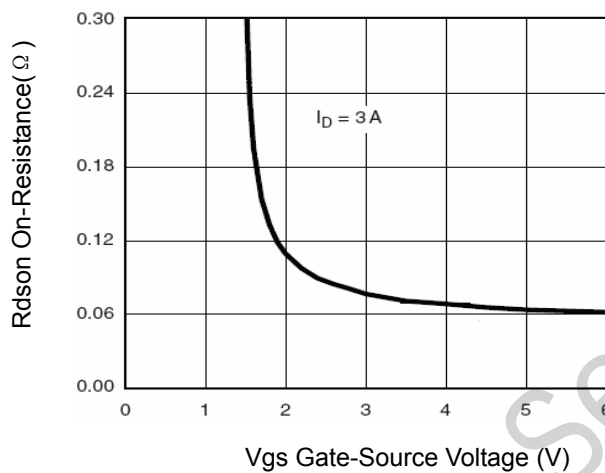
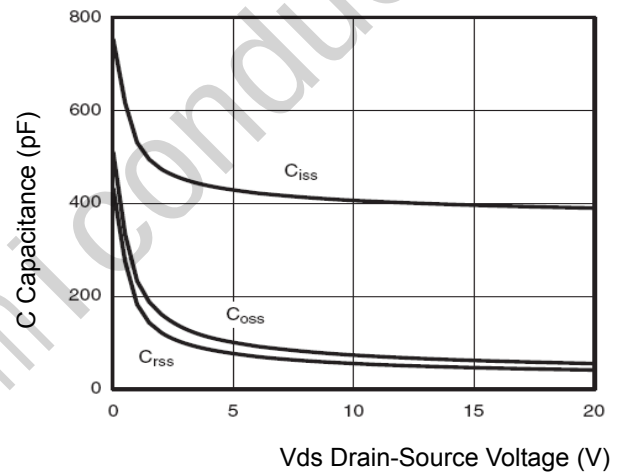
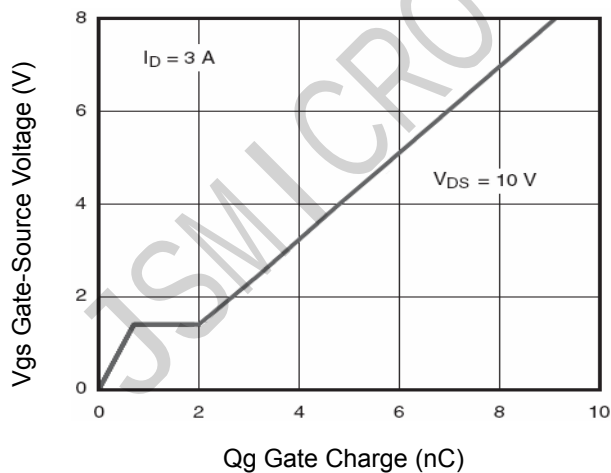
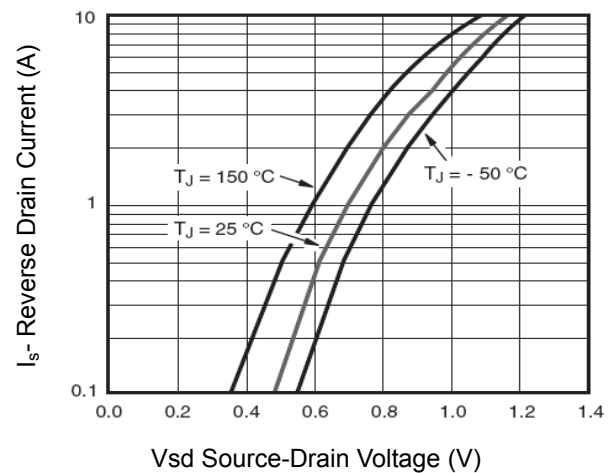


Figure 6 Drain-Source On-Resistance


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

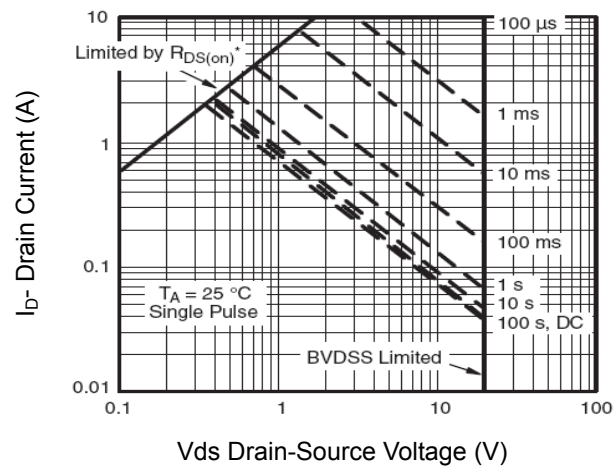


Figure 13 Safe Operation Area

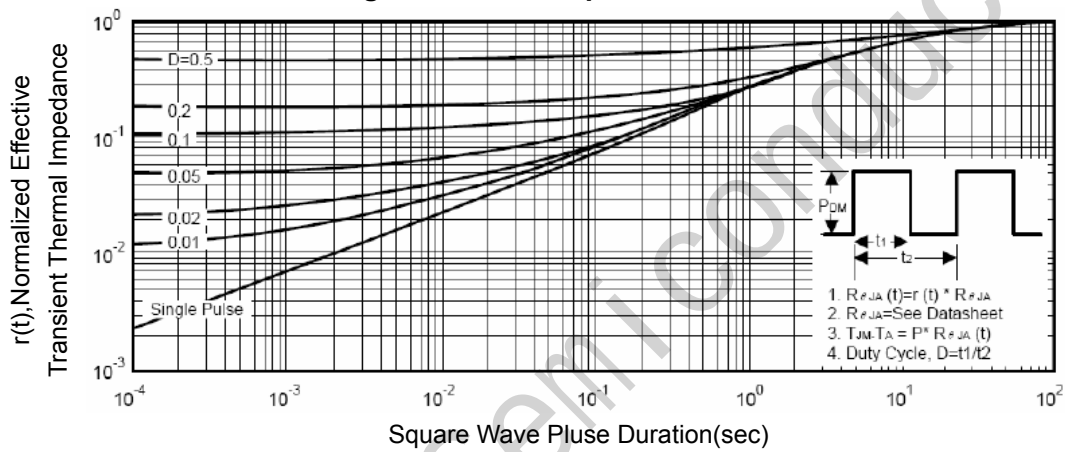


Figure 14 Normalized Maximum Transient Thermal Impedance

Package Outline

SOT-23

Dimensions in mm

