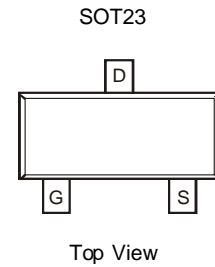


N-Channel Enhancement-Mode MOSFET
Description and Applications

This new generation MOSFET has been designed to minimize the on-state resistance ($R_{DS(on)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

- Power management functions
- DC-DC Converters
- Backlighting


■ MAXIMUM RATINGS

Characteristic	Symbol	Max	Unit
Drain-Source Voltage	BV_{DSS}	50	V
Gate- Source Voltage	V_{GS}	± 20	V
Drain Current continuous	I_{DR}	173	mA
Drain Current-pulsed	I_{DRM}	700	mA

■ THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation $T_A=25^\circ\text{C}$ Derate above 25°C	P_D	830 1.8	mW mW/ $^\circ\text{C}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	350	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	T_J, T_{stg}	$150^\circ\text{C}, -55\text{to}+150^\circ\text{C}$	

N-Channel Enhancement-Mode MOSFET
■ ELECTRICAL CHARACTERISTICS

 (T_A=25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage (I _D =10uA, V _{GS} =0V)	BV _{DSS}	50	—	—	V
Gate Threshold Voltage (I _D =1mA, V _{GS} =V _{DS})	V _{GS(th)}	0.4	—	1.8	V
Drain-Source On Voltage (I _D =50mA, V _{GS} =5V) (I _D =500mA, V _{GS} =10V)	V _{DS(ON)}	—	—	0.375 3.75	V
Diode Forward Voltage Drop (I _{SD} =180mA, V _{GS} =0V)	V _{SD}	—	—	1.5	V
Zero Gate Voltage Drain Current (V _{GS} =0V, V _{DS} =40V) (V _{GS} =0V, V _{DS} =40V, T _A =150°C)	I _{DSS}	—	—	1 10	uA
Gate Body Leakage (V _{GS} =±20V, V _{DS} =0V)	I _{GSS}	—	—	±100	nA
Static Drain-Source On-State Resistance (I _D =100mA, V _{GS} =10V) (I _D =100mA, V _{GS} =5V) (I _D =10mA, V _{GS} =2.5V)	R _{DS(ON)}	—	—	15 20 30	Ω
Input Capacitance (V _{GS} =0V, V _{DS} =10V, f=1MHz)	C _{ISS}	—	—	25	pF
Common Source Output Capacitance (V _{GS} =0V, V _{DS} =10V, f=1MHz)	C _{OSS}	—	—	15	pF
Turn-ON Time (V _{DS} =20V, V _{GS} =10V, R _{GEN} =50Ω)	t _(on)	—	—	8	ns
Turn-OFF Time (V _{DS} =20V, V _{GS} =10V, R _{GEN} =50Ω)	t _(off)	—	—	15	ns
Reverse Recovery Time (I _{SD} =180mA, V _{GS} =0V)	t _{rr}	—	30	—	ns

- FR-5=1.0×0.75×0.062in.
- Alumina=0.4×0.3×0.024in.99.5%alumina.
- Pulse Width≤300 μs; Duty Cycle≤2.0%.

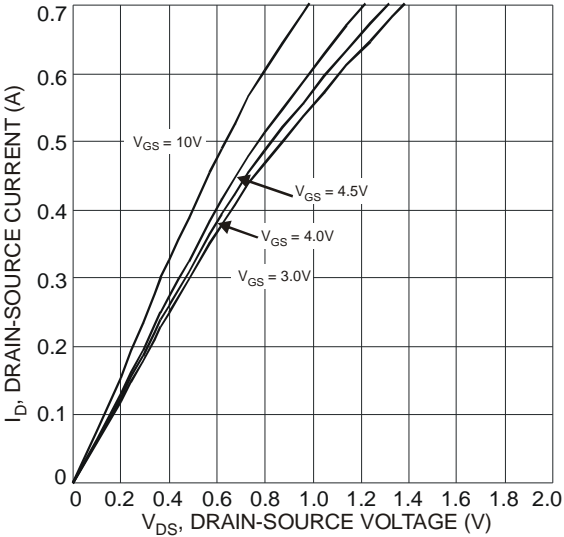


Fig. 1 Drain-Source Current vs. Drain-Source Voltage

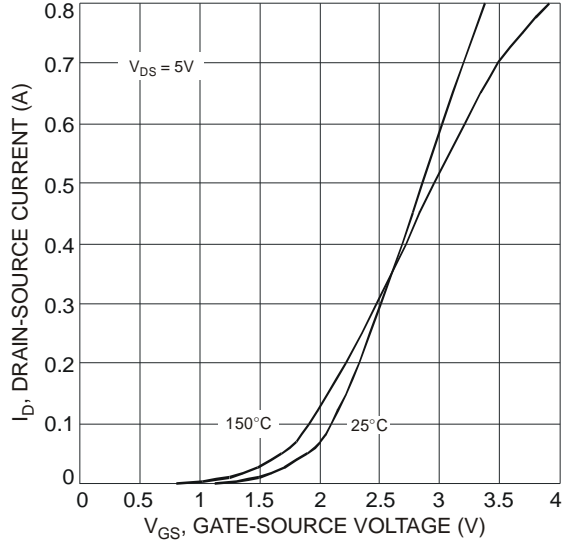


Fig. 2 Transfer Characteristics

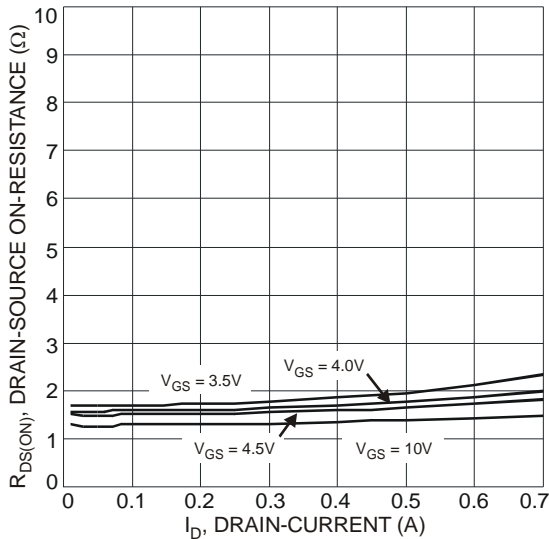


Fig. 3 Drain-Source On-Resistance vs. Drain-Current

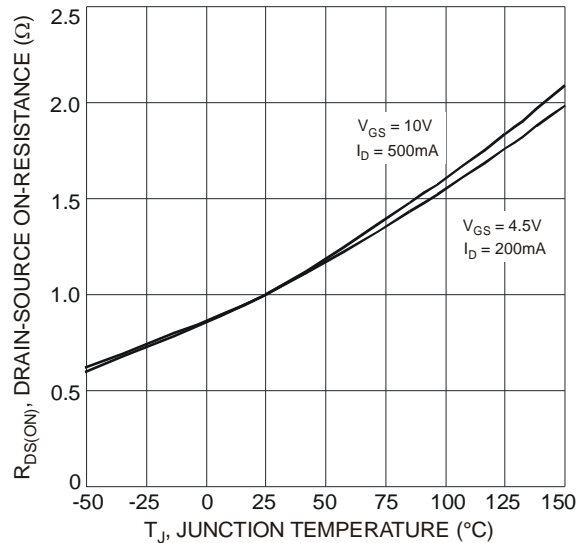


Fig. 4 Drain-Source On-Resistance vs. Junction Temperature

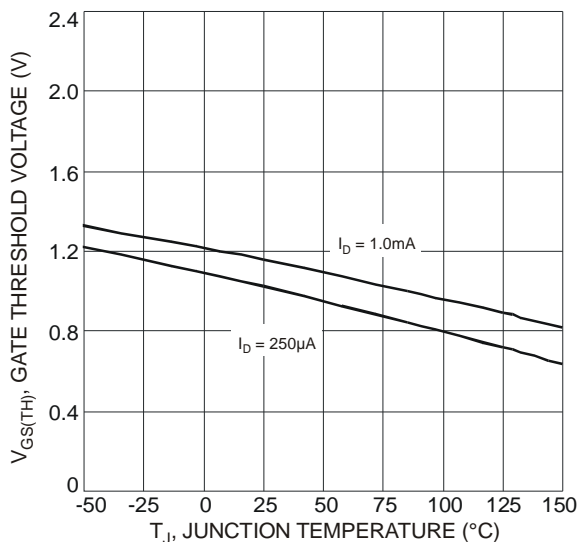


Fig. 5 Gate Threshold Voltage vs. Junction Temperature

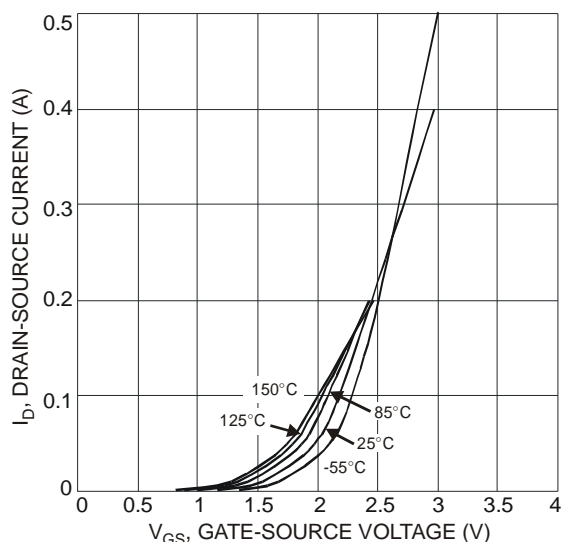


Fig. 6 Transfer Characteristics

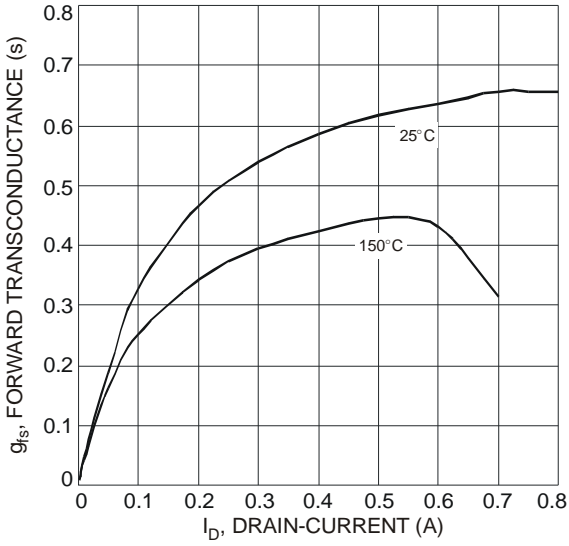


Fig. 7 Typical Transfer Characteristic

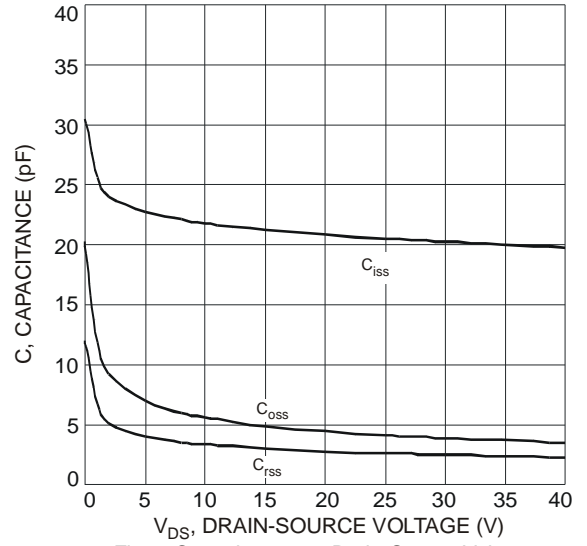


Fig. 8 Capacitance vs. Drain-Source Voltage

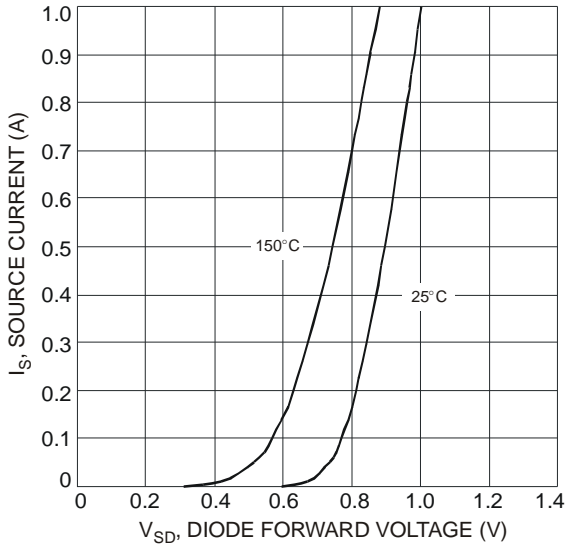


Fig. 9 Source Current vs. Diode Forward Voltage

Outline Drawing – SOT-23

PACKAGE OUTLINE		SOT-23			
		DIMENSIONS			
SYMBOL	MILLIMETER		INCHES		
	MIN	MAX	MIN	MAX	
A	0.900	1.150	0.035	0.045	
A1	0.000	0.100	0.000	0.004	
A2	0.900	1.050	0.035	0.041	
D	2.800	3.000	0.110	0.118	
b	0.300	0.500	0.012	0.020	
E	2.250	2.550	0.089	0.100	
E1	1.200	1.400	0.047	0.055	
e	0.950 BSC		0.037 BSC		
L	0.300	0.500	0.012	0.020	
θ	0	8°	0	8°	

DIMENSIONS		
DIM	INCHES	MILLIMETERS
M	0.088	2.20
C	0.0058	0.15
Z	0.093	2.35
e	0.037 BSC	0.95 BSC
e1	0.074 BSC	1.9 BSC
b	0.0389	0.35

Notes

1. Dimensioning and tolerances per ANSI Y14.5M, 1985.
2. Controlling Dimension: Inches
3. Pin 3 is the cathode (Unidirectional Only).
4. Dimensions are exclusive of mold flash and metal burrs.