

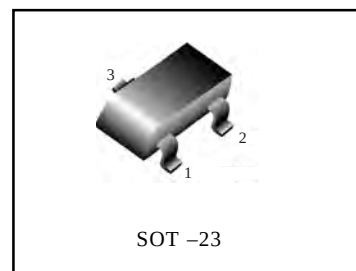
POWER MOSFET

200 mAmps, 50 Volts

N-Channel SOT-23

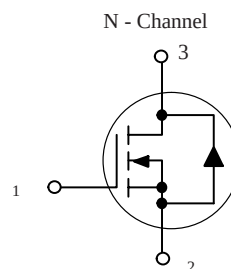
Typical applications are dc-dc converters, power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

- Low Threshold Voltage ($V_{GS(th)}$: 0.5V...1.5V) makes it ideal for low voltage applications
- Miniature SOT-23 Surface Mount Package saves board space



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

Rating	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	50	Vdc
Gate-to-Source Voltage – Continuous	V_{GS}	± 20	Vdc
Drain Current			mA
– Continuous @ $T_A = 25^\circ\text{C}$	I_D	200	
– Pulsed Drain Current ($t_p \leq 10\mu\text{s}$)	I_{DM}	800	
Total Power Dissipation @ $T_A = 25^\circ\text{C}$	P_D	225	mW
Operating and Storage Temperature Range	T_J, T_{stg}	- 55 to 150	C
Thermal Resistance – Junction-to-Ambient	$R_{\theta JA}$	556	C/W
Maximum Lead Temperature for Soldering Purposes, for 10 seconds	T_L	260	C



ORDERING INFORMATION

Device	Marking	Shipping
FTK138LT1G	J1	3000/Tape&Reel

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain–Source Breakdown Voltage (V _{GS} = 0 Vdc, I _D = 250 μAdc)		V _{(BR)DSS}	50	–	–	Vdc
Zero Gate Voltage Drain Current (V _{DS} = 25 Vdc, V _{GS} = 0 Vdc) (V _{DS} = 50 Vdc, V _{GS} = 0 Vdc)		I _{DSS}	– –	– –	0.1 0.5	μAdc
Gate–Source Leakage Current (V _{GS} = ±20 Vdc, V _{DS} = 0Vdc)		I _{GSS}	–	–	±0.1	μAdc
ON CHARACTERISTICS (Note 1.)						
Gate–Source Threshold Voltage (V _{DS} = V _{GS} , I _D = 1.0 mAdc)		V _{GS(th)}	0.5	–	1.5	Vdc
Static Drain–Source On–Resistance (V _{GS} = 2.75 Vdc, I _D < 200 mAdc, T _A = -40 C to +85 C) (V _{GS} = 5.0 Vdc, I _D = 200 mAdc)		r _{DS(on)}	– –	5.6 –	10 3.5	Ω
Forward Transconductance (V _{DS} = 25 Vdc, I _D = 200 mAdc, f = 1.0 KHz)		g _{FS}	100	–	–	mmhos
DYNAMIC CHARACTERISTICS						
Input Capacitance	(V _{DS} = 25 Vdc, V _{GS} = 0, f = 1 MHz)	C _{iss}	–	40	50	pF
Output Capacitance	(V _{DS} = 25 Vdc, V _{GS} = 0, f = 1 MHz)	C _{oss}	–	12	25	pF
Transfer Capacitance	(V _{DG} = 25 Vdc, V _{GS} = 0, f = 1 MHz)	C _{rss}	–	3.5	5.0	pF
SWITCHING CHARACTERISTICS (Note 4.)						
Turn–On Delay Time	(V _{CC} = 30 Vdc , I _D = 0 2 Adc)	t _{d(on)}	–	–	20	ns
Turn–Off Delay Time		t _{d(off)}	–	–	20	ns

1. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%.
2. Switching characteristics are independent of operating junction temperature.

TYPICAL ELECTRICAL CHARACTERISTICS

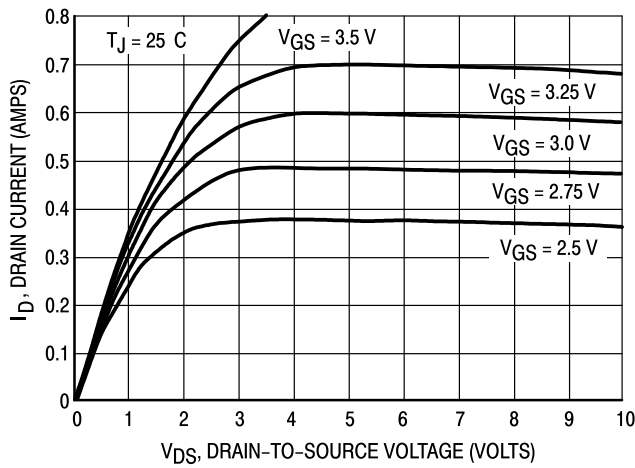


Figure 1. On-Region Characteristics

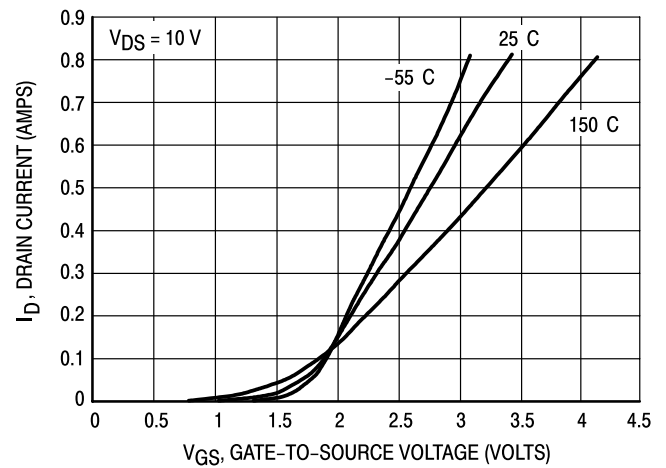


Figure 2. Transfer Characteristics

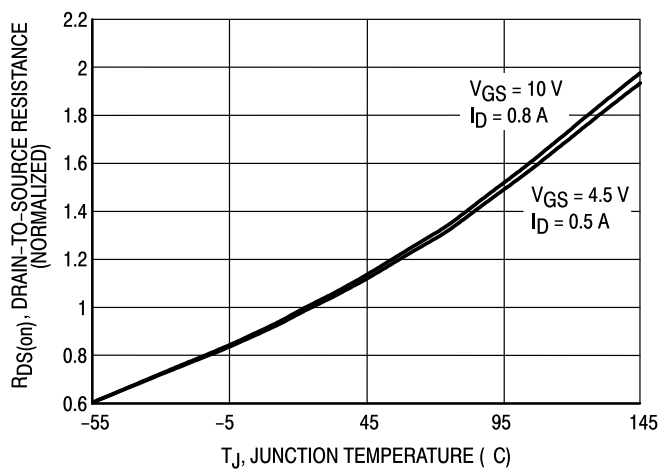


Figure 3. On-Resistance Variation with Temperature

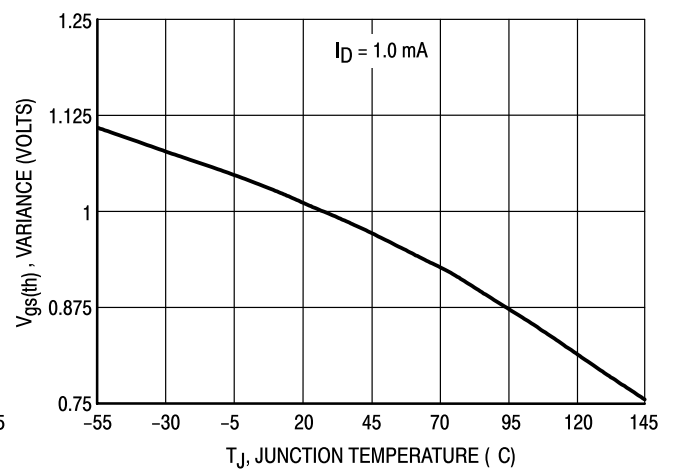


Figure 4. Threshold Voltage Variation with Temperature

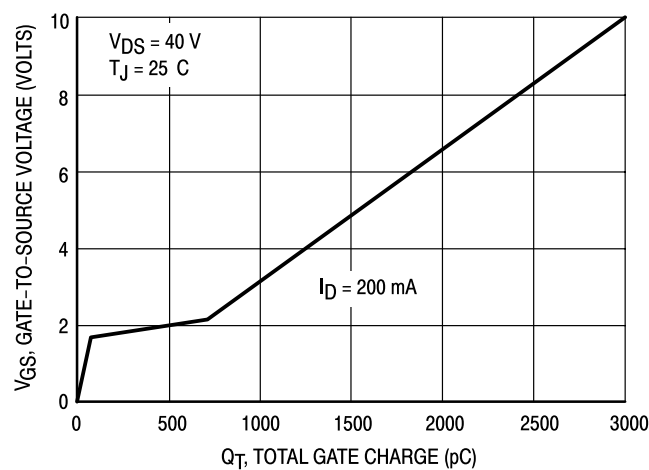


Figure 5. Gate Charge

TYPICAL ELECTRICAL CHARACTERISTICS

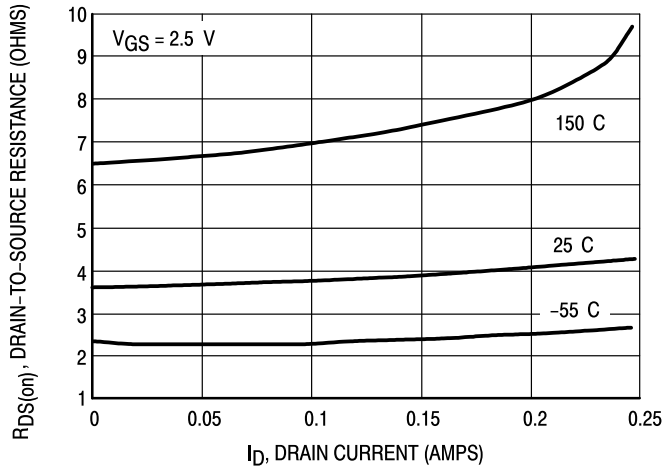


Figure 6. On-Resistance versus Drain Current

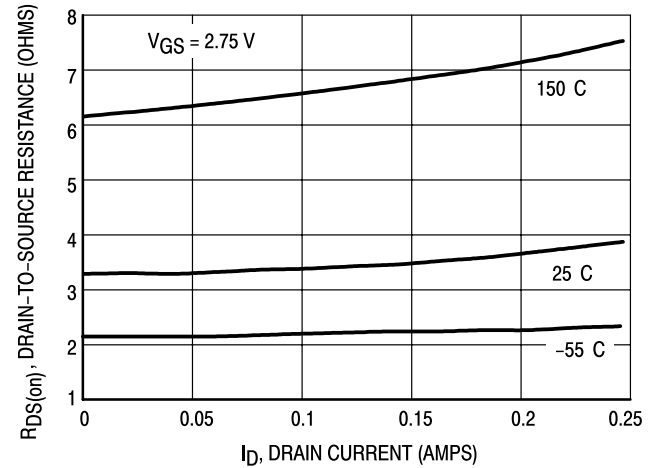


Figure 7. On-Resistance versus Drain Current

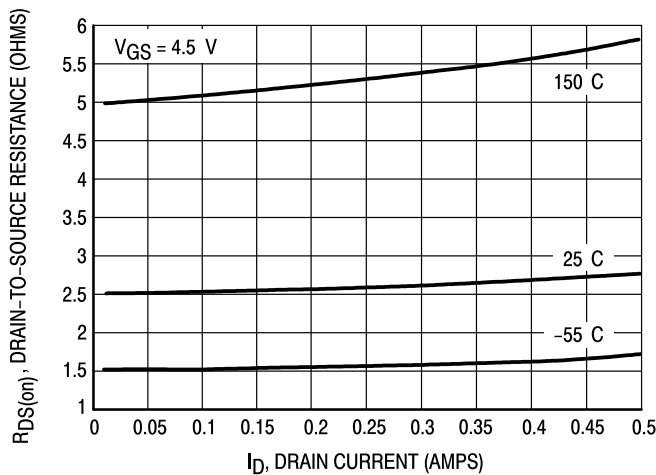


Figure 8. On-Resistance versus Drain Current

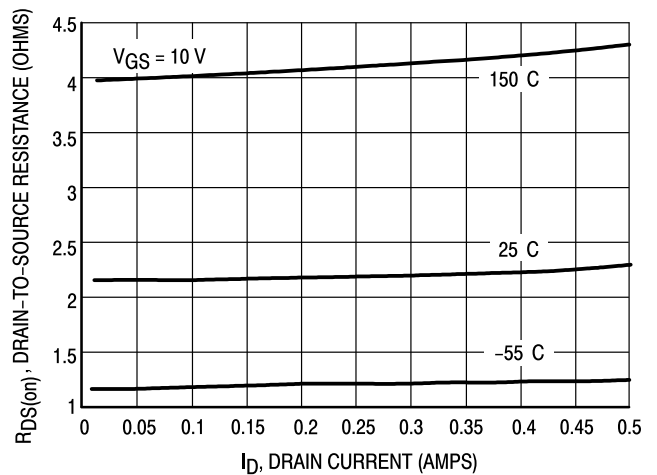


Figure 9. On-Resistance versus Drain Current

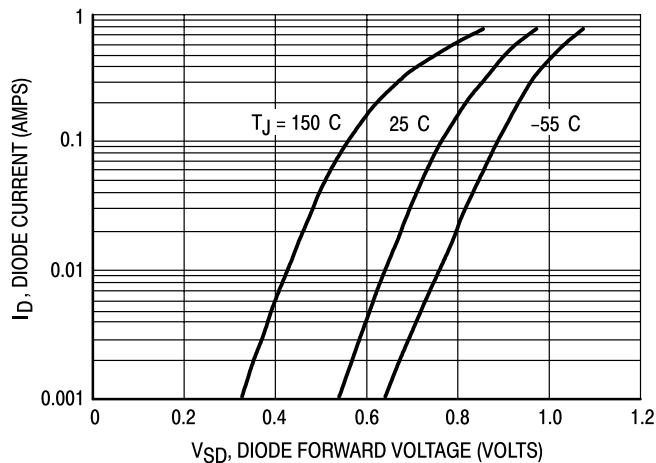


Figure 10. Body Diode Forward Voltage

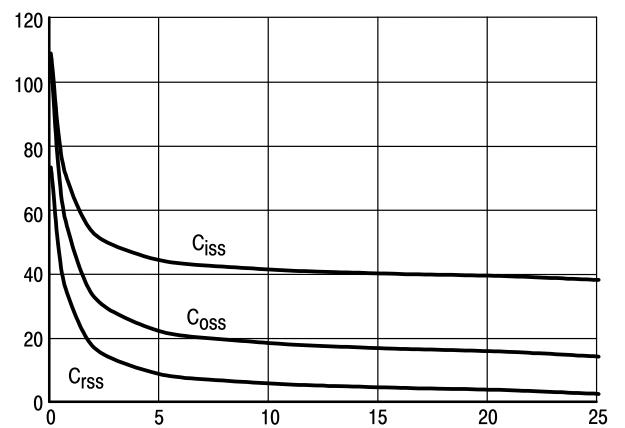
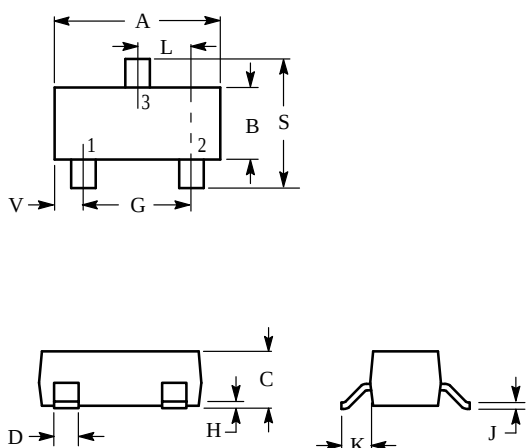


Figure 11. Capacitance

SOT-23



NOTES:

1 DIMENSIONING AND TOLERANCING PER ANSI

Y14.5M, 1982

2 CONTROLLING DIMENSION: INCH

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60

PIN 1 BASE

2 EMITTER

3 COLLECTOR

