POWER MOSFET
200 mAmps, 50 Volts

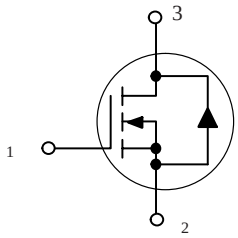
N–Channel SOT–23

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

SOT –23

N - Channel



MAXIMUM RATINGS (T_J = 25 °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 – Continuous @ T_A = 25 C – Pulsed Drain Current ($t_p \leq 10\mu s$)	 I_D I_{DM}	 200 800	mA
Total Power Dissipation @ T_A = 25 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		I_{DSS}				μAdc
(V_{DS} = 25 Vdc, V_{GS} = 0 Vdc)			–	–	0.1	
(V_{DS} = 50 Vdc, V_{GS} = 0 Vdc)			–	–	0.5	
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		$r_{DS(on)}$				Ω
(V_{GS}= 2.75 Vdc, I_D < 200 mAdc, T_A = -40 C to +85 C)			–	5.6	10	
(V_{GS}= 5.0 Vdc, I_D = 200 mAdc)			–	–	3.5	
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

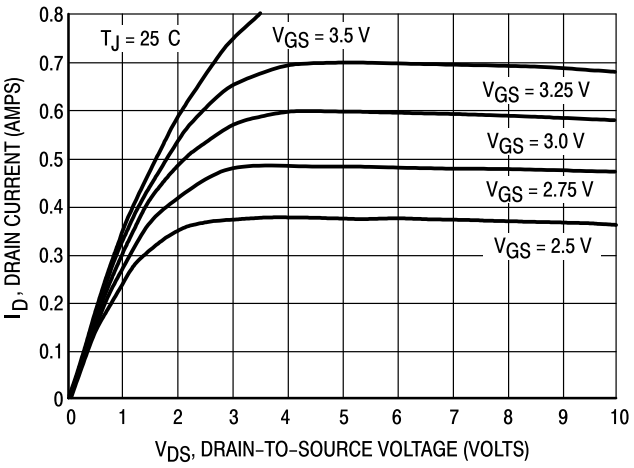


Figure 1. On–Region Characteristics

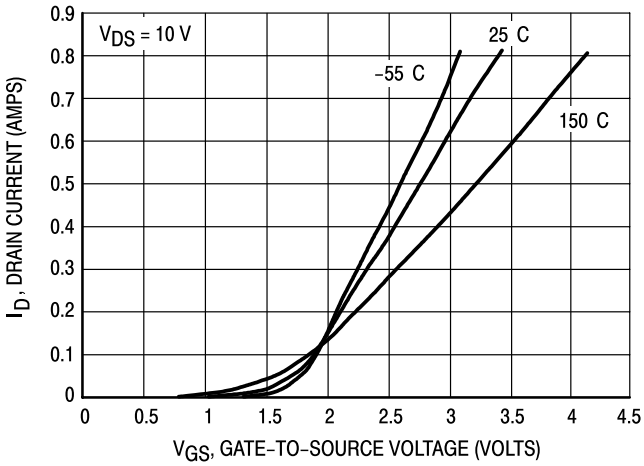


Figure 2. Transfer Characteristics

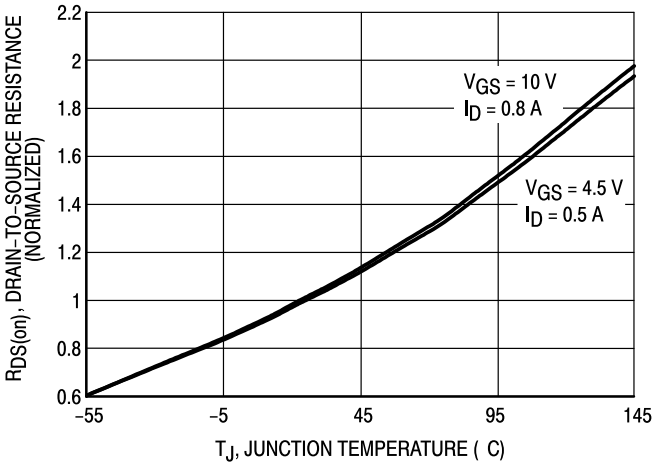


Figure 3. On–Resistance Variation with Temperature

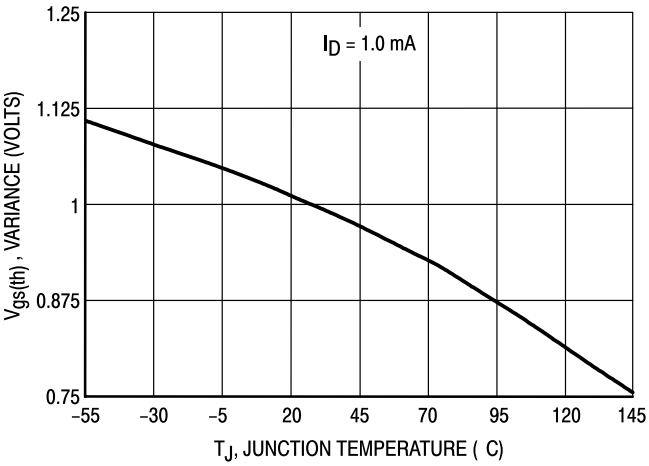


Figure 4. Threshold Voltage Variation with Temperature

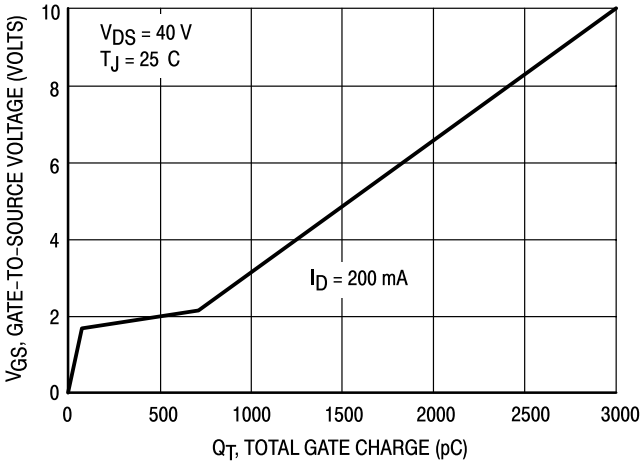


Figure 5. Gate Charge

TYPICAL ELECTRICAL CHARACTERISTICS

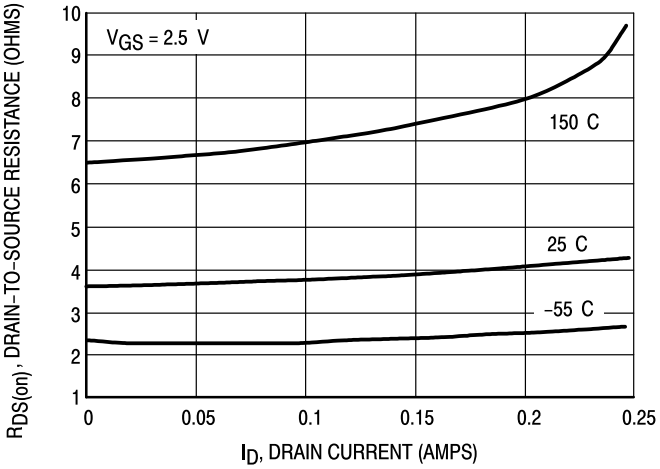


Figure 6. On–Resistance versus Drain Current

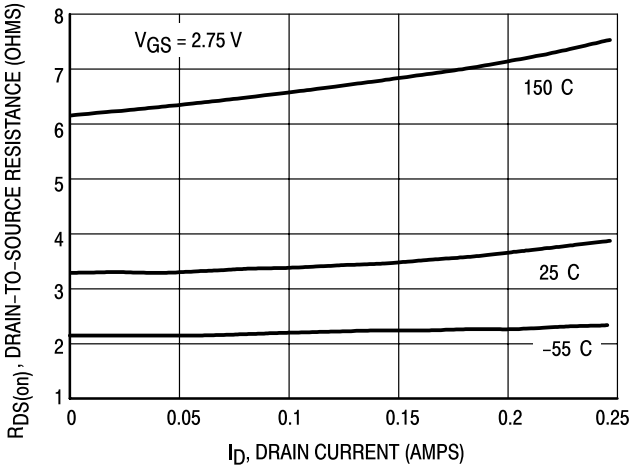


Figure 7. On–Resistance versus Drain Current

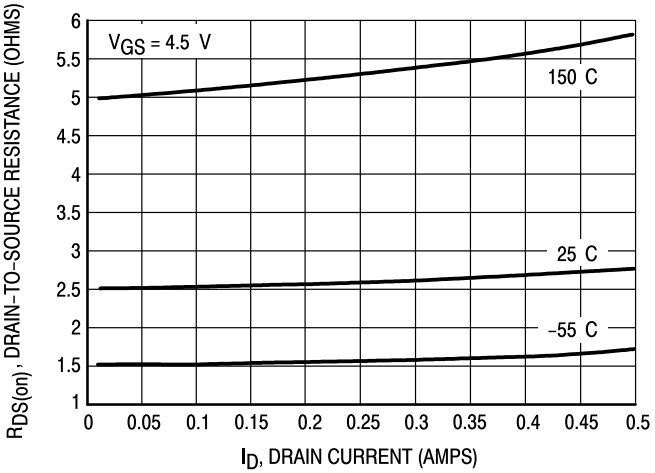


Figure 8. On–Resistance versus Drain Current

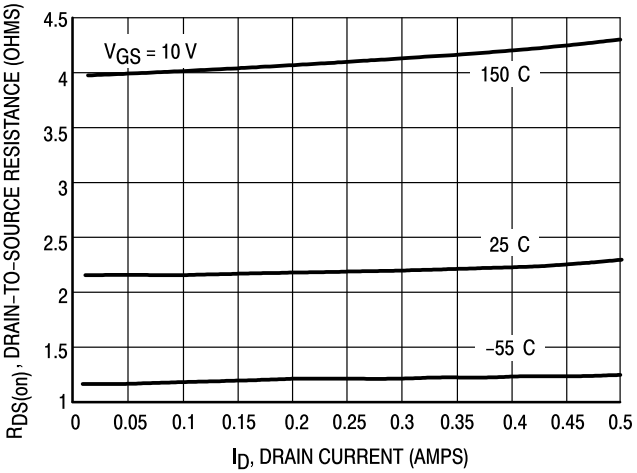


Figure 9. On–Resistance versus Drain Current

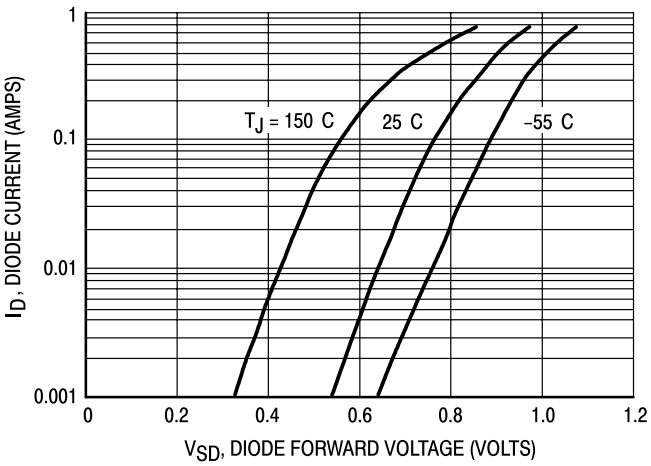


Figure 10. Body Diode Forward Voltage

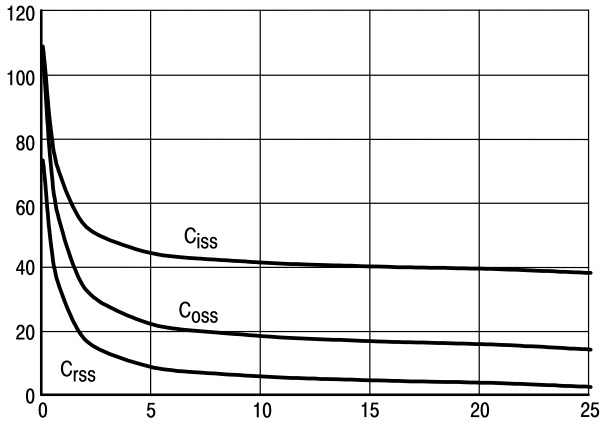
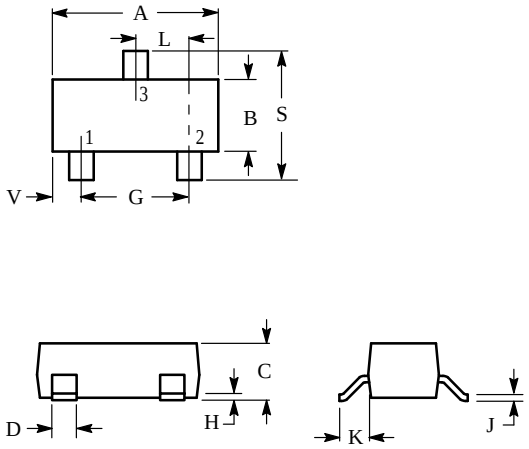


Figure 11. Capacitance

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