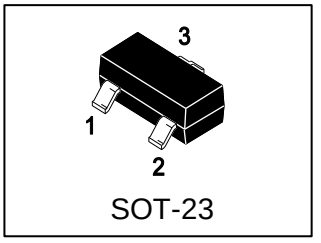
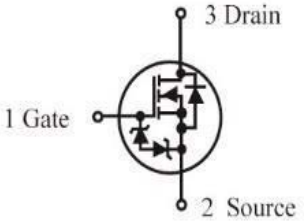
30V, 0.56A, N−Channel, Gate ESD Protection

1. FEATURES

- Low gate voltage threshold(VGS(th))to facilitate drive circuit design
- Low gate charge for fast switching
- ESD protected gate
- Minimum breakdown voltage rating of 30V
- We declare that the material of product compliance with RoHS requirements and Halogen Free.



SOT-23



2. APPLICATIONS

- Level shifters
- Level switches
- Low side load switches
- Portable applications

3. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
FTK4003N	TR8	3000/Tape&Reel

4. MAXIMUM RATINGS(Ta = 25℃)

Parameter		Symbol	Limits	Unit
Drain–Source Voltage		VDSS	30	V
Gate–to–Source Voltage – Continuous		VGS	±10	V
Continuous Drain Current (Note 1) Steady State	TA = 25℃	ID	0.5	A
	TA = 85℃		0.37	
Continuous Drain Current (Note 1) t<10s	TA = 25℃		0.56	
	TA = 85℃		0.4	
Pulsed Drain Current(tp=10μs)		IDM	1.7	A
Continuous Source Current (Body Diode)		IS	1	A
Maximum Power Dissipation(Note 1)		PD		W
Steady State			0.69	
t<5s			0.83	
Junction and Storage temperature		TJ,Tstg	−55~ +150	℃
Maximum Temperature for Soldering Purposes		TL	260	℃

5. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Thermal Resistance, Junction–to–Ambient	RθJA		ºC/W
Steady State(Note 1)		180	
t<10s(Note 1)		150	

6. ELECTRICAL CHARACTERISTICS (Ta= 25ºC)

OFF CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain–Source Breakdown Voltage (VGS= 0, ID= 100μAdc)	V(BR)DSS	30	-	-	Vdc
Drain−to−Source Breakdown Voltage Temperature Coefficient	V(BR)DSS/ TJ	-	40	-	mV/°C
Zero Gate Voltage Drain Current (VDS= 30V, VGS= 0V)	IDSS	-	-	1.0	μAdc
Gate–Body Leakage Current, Forward (VDS= 0V, VGS= ±10V)	IGSS	-	-	±1.0	μAdc

ON CHARACTERISTICS (Note 2)

Gate Threshold Voltage (VDS= VGS, ID= 250μAdc)	VGS(th)	0.8	-	1.6	Vdc
Negative Threshold Temperature Coefficient	VGS(TH)/TJ	-	3.4	-	mV/°C
Static Drain–Source On–State Resistance	RDS(on)				Ω
(VGS= 4.0V, ID= 10mA)		-	1	1.5	
(VGS= 2.5V, ID= 10mA)		-	1.5	2	
Forward Transconductance (VDS= 3.0V, ID= 10mA)	gfs	-	0.33	-	S

DYNAMIC CHARACTERISTICS

Input Capacitance (VGS= 0V, f= 1.0MHz, VDS= 5V)	Ciss	-	41	-	pF
Output Capacitance (VGS= 0V, f= 1.0MHz, VDS= 5V)	Coss	-	12	-	pF
Reverse Transfer Capacitance (VGS= 0V, f= 1.0MHz, VDS= 5V)	Crss	-	8.1	-	pF

SWITCHING CHARACTERISTICS

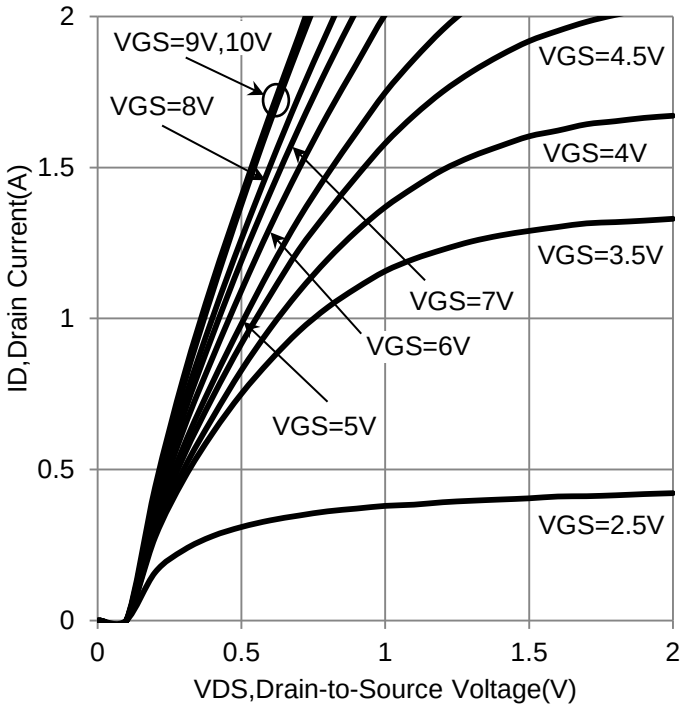
Turn-On Delay Time	(VGS= 4.5V, VDD= 5.0V, ID= 0.1A, RG= 50Ω)	td(on)	-	16.7	-	ns
Rise Time		tr	-	47.9	-	
Turn-Off Delay Time		td(off)	-	65.1	-	
Fall Time		tf	-	64.2	-	

SOURCE–DRAIN DIODE CHARACTERISTICS

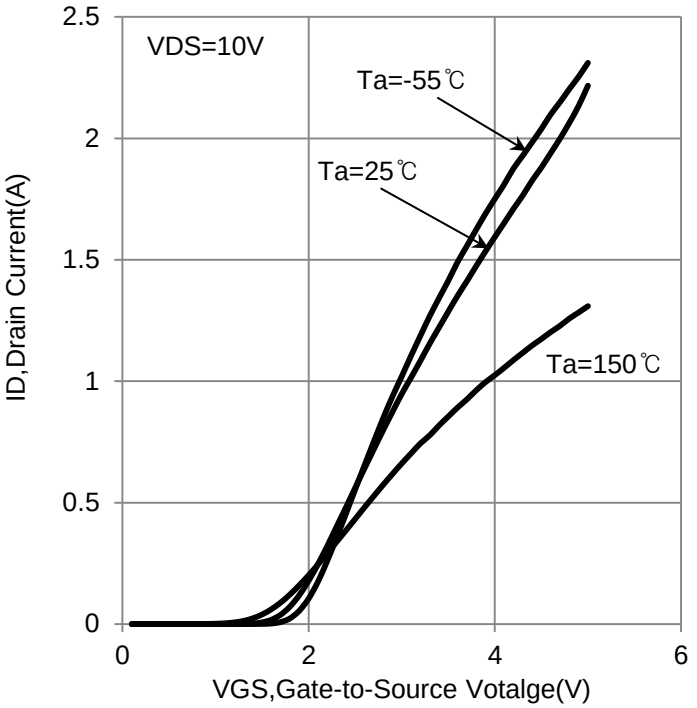
Forward Voltage (VGS= 0Vdc, ISD= 10mAdc)	VSD	-	0.65	0.7	V
Reverse Recovery Time (VGS= 0V, dIS/dt= 8A/μs, IS= 10mA)	trr	-	14	-	ns

1. Surface−mounted on FR4 board using 1 in sq pad size (Cu area = 1.127 in sq [1 oz] including traces).
2. Pulse Test: Pulse Width≤ 300μs, Duty Cycle≤ 2.0%.

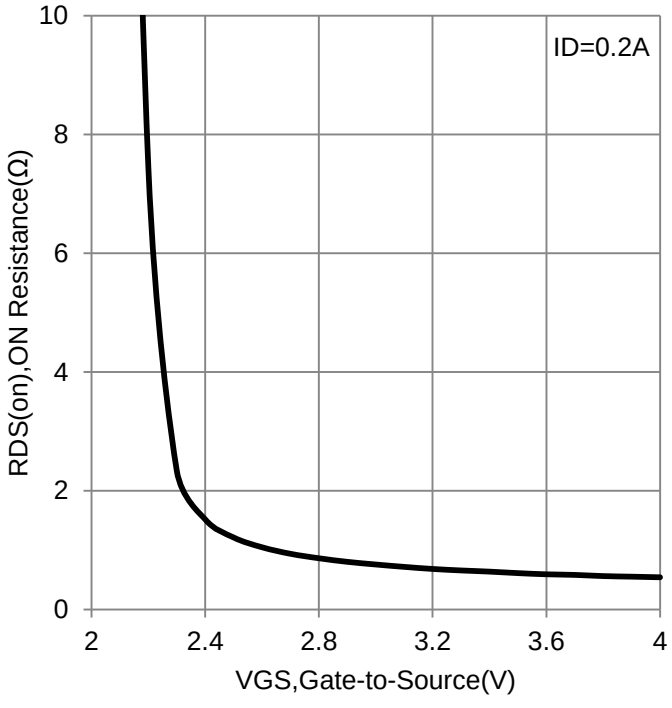
7. ELRCTRICAL CHARACTERISTICS CURVES



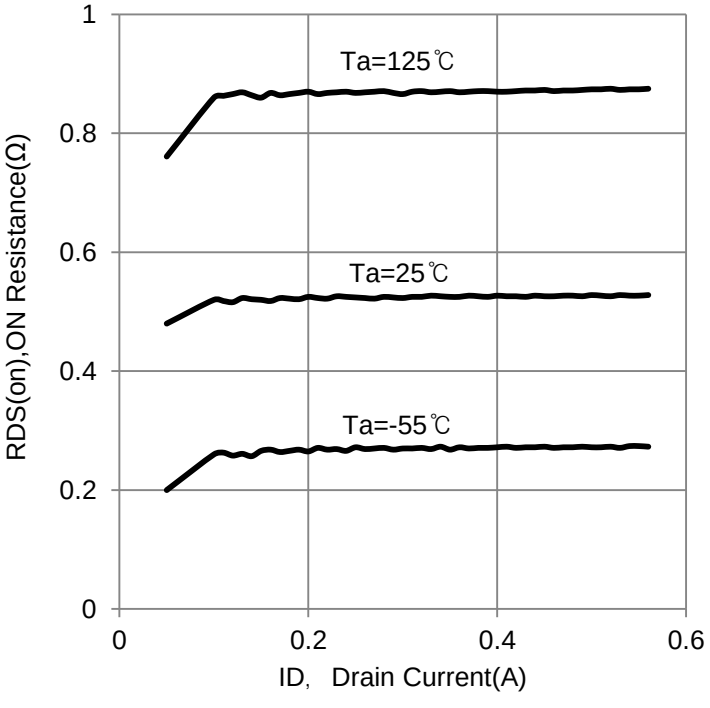
On-Region Characteristics



Transfer Characteristics

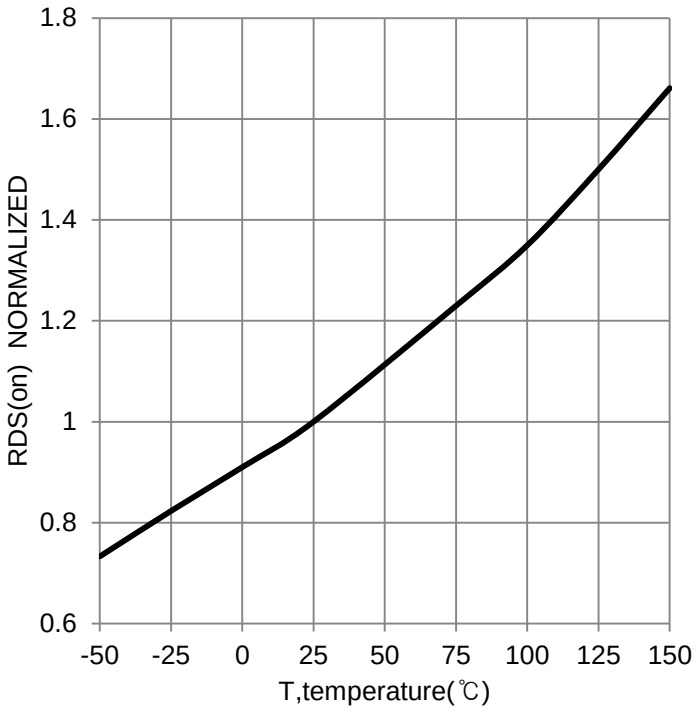


RDS(on) vs. VGS

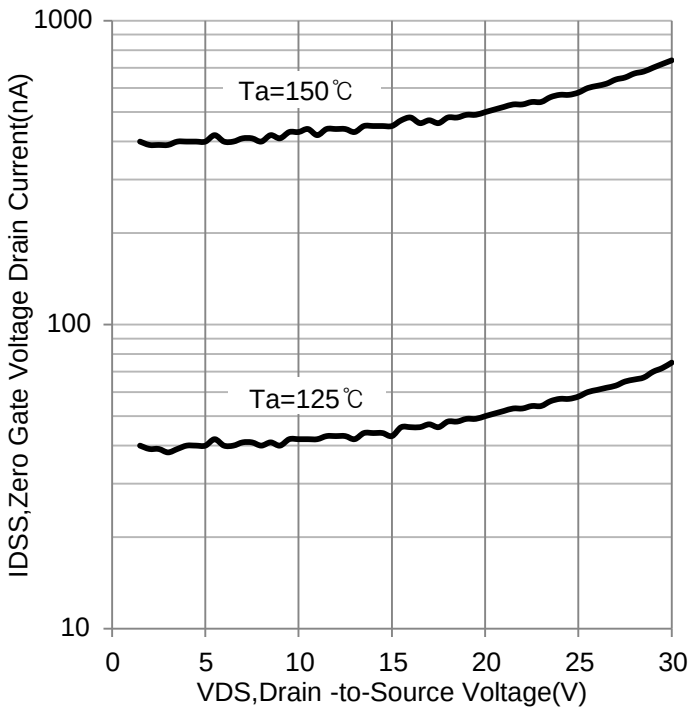


RDS(on) vs. ID

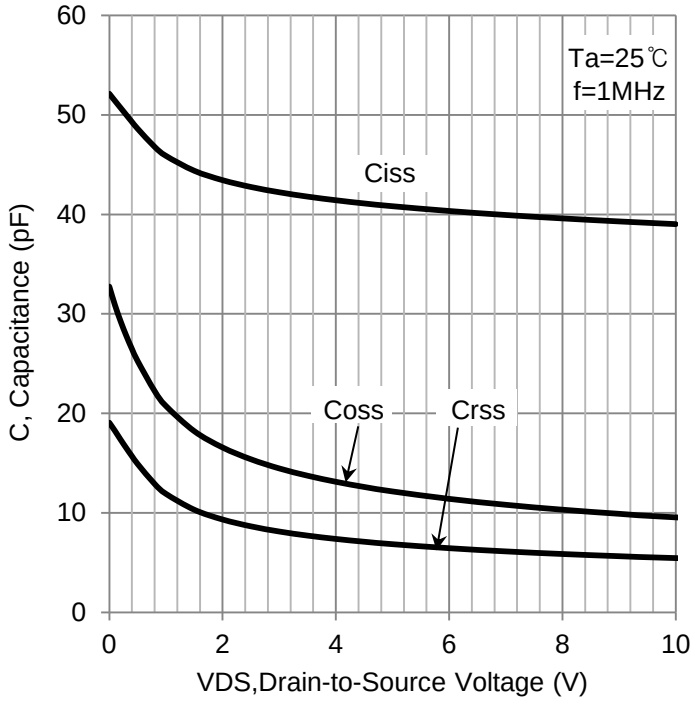
7. ELRCTRICAL CHARACTERISTICS CURVES（Con.）



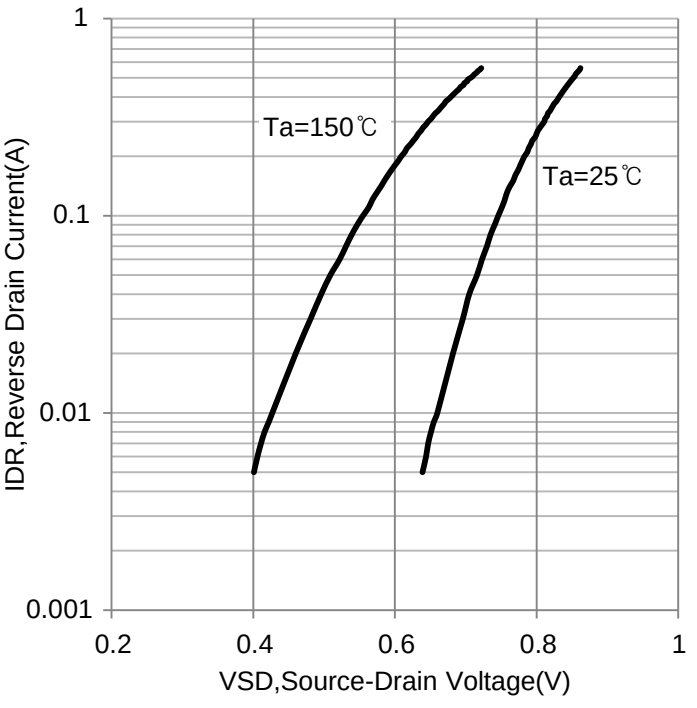
RDS(on) vs. Temperature



IDSS vs. VDS

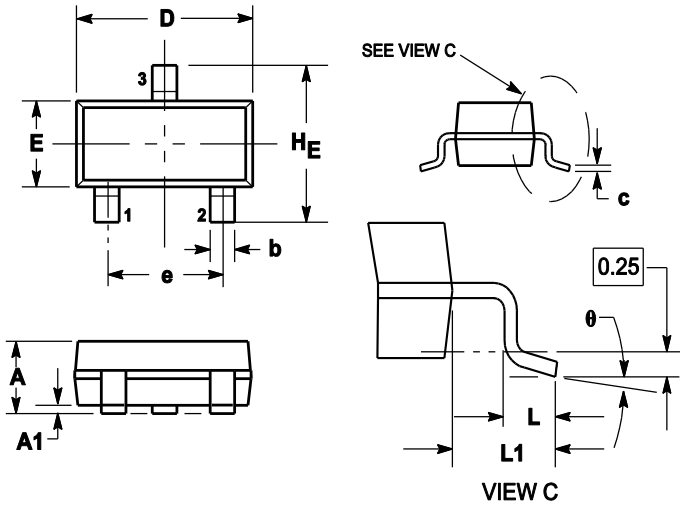


Capacitance Variation



Diode Forward Characteristics

8.OUTLINE AND DIMENSIONS



Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1	1.11	0.035	0.04	0.044
A1	0.01	0.06	0.1	0.001	0.002	0.004
b	0.37	0.44	0.5	0.015	0.018	0.02
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.9	3.04	0.11	0.114	0.12
E	1.20	1.3	1.4	0.047	0.051	0.055
e	1.78	1.9	2.04	0.07	0.075	0.081
L	0.10	0.2	0.3	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
H_E	2.10	2.4	2.64	0.083	0.094	0.104
θ	0°	---	10°	0°	---	10°

9.SOLDERING FOOTPRINT