

TF3404 N-Channel 30-V(D-S) MOSFET

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	0.018Ω@ 10V	5.8A
	0.025Ω@ 4.5V	

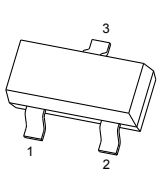
General FEATURE

- TrenchFET Power MOSFET
- Lead free product is acquired
- Surface mount package

APPLICATION

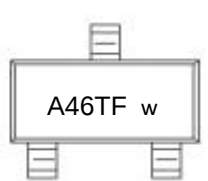
- Load Switch for Portable Devices
- DC/DC Converter

SOT-23



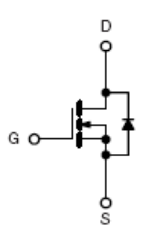
1.GATE
2.SOURCE
3.DRAIN

MARKING



*w: week code

Equivalent Circuit



Maximum ratings ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current	I_D	5.8	A
Pulsed Drain Current*1	I_{DM}	20	
Continuous Source-Drain Diode Current	I_S	1.0	
Maximum Power Dissipation	P_D	1.4	W
Thermal Resistance from Junction to Ambient($t \leq 10s$)	$R_{\theta JA}$	89	$^{\circ}\text{C/W}$
Junction Temperature	T_J	-55 ~+150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-55 ~+150	

Note :

*1. Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$

MOSFET ELECTRICAL CHARACTERISTICS

T_a =25 °C unless otherwise specified

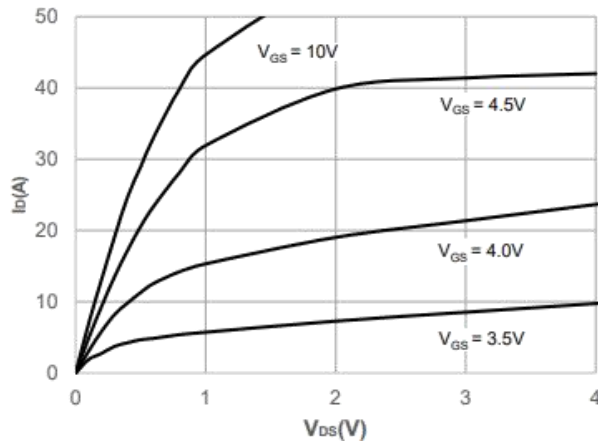
Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Static						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	30	-	-	V
Gate-source threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = 250μA	1.2	1.6	2.4	
Gate-source leakage	I _{GSS}	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
Zero gate voltage drain current	I _{DSS}	V _{DS} =24V, V _{GS} =0V	-	-	100	nA
Drain-source on-state resistance ^a	R _{DS(on)}	V _{GS} =10V, I _D =5.8A	-	0.018	0.025	Ω
		V _{GS} =4.5V, I _D =5A	-	0.025	0.035	
Forward transconductance ^a	g _{fs}	V _{DS} =5V, I _D =5A	-	15	-	S
Dynamic ^b						
Input capacitance	C _{iss}	V _{DS} =15V,V _{GS} =0V,f =1MHz	-	485	-	pF
Output capacitance	C _{oss}		-	69	-	
Reverse transfer capacitance	C _{rss}		-	53	-	
Total gate charge	Q _g	V _{DS} =15V,V _{GS} =10V ,I _D =5.8A	-	10	-	nC
Gate-source charge	Q _{gs}		-	2	-	
Gate-drain charge	Q _{gd}		-	2	-	
Turn-on delay time	t _{d(on)}	V _{DD} =15V,R _L =3Ω V _{GS} =10V ,R _{gen} =3Ω	-	4	-	ns
Rise time	t _r		-	11	-	
Turn-off delay time	t _{d(off)}		-	14	-	
Fall time	t _f		-	2	-	
Drain-source body diode characteristics						
Continuous source-drain diode current	I _s	T _C =25°C	-	-	2.5	A
Body diode voltage	V _{SD}	I _s =1.0A	-	0.7	1.0	V

Notes :

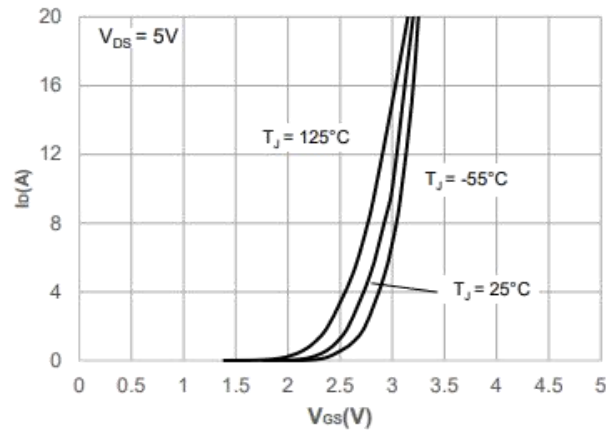
a. Pulse Test : Pulse Width < 300μs, Duty Cycle ≤2%.

b. Guaranteed by design, not subject to production testing.

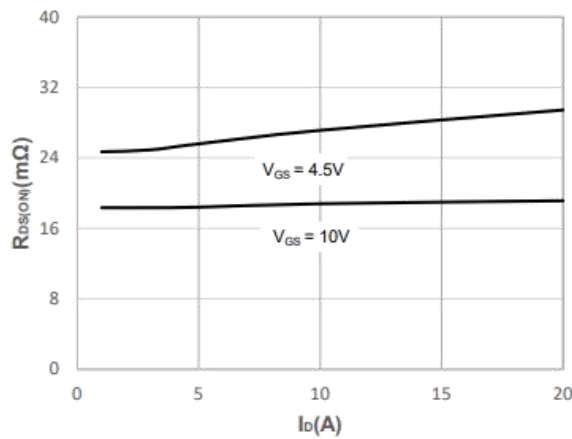
Typical Electrical and Thermal Characteristics



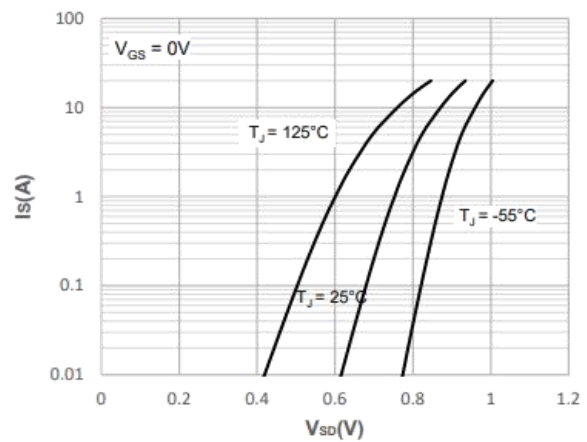
Output Characteristics



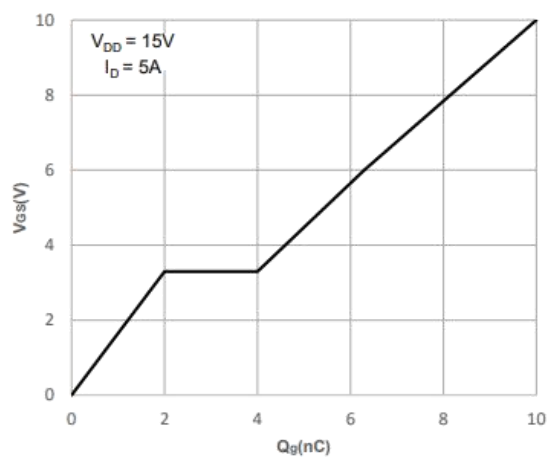
Typical Transfer Characteristics



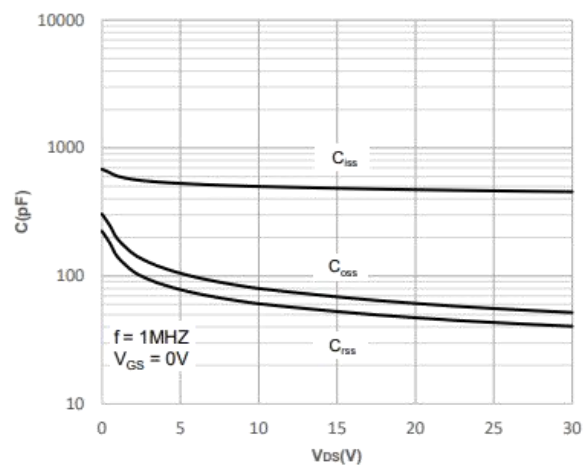
Drain-Source On-Resistance



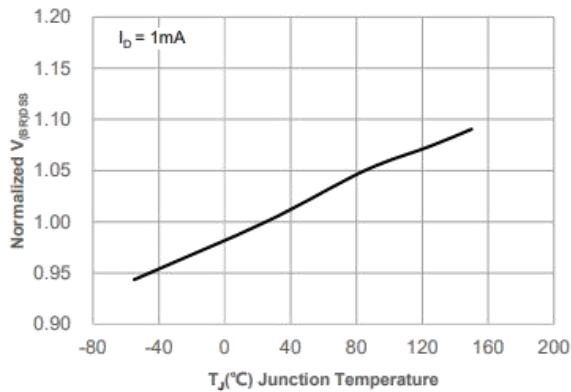
Body Diode Characteristics



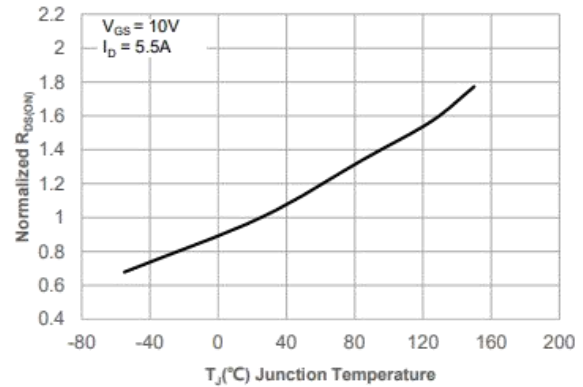
Gate Charge Characteristic



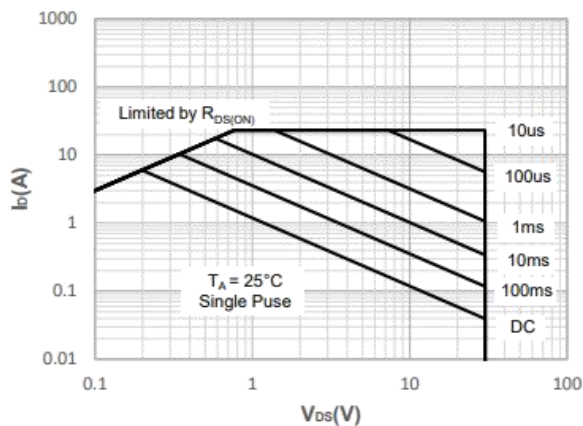
Capacitance Characteristics



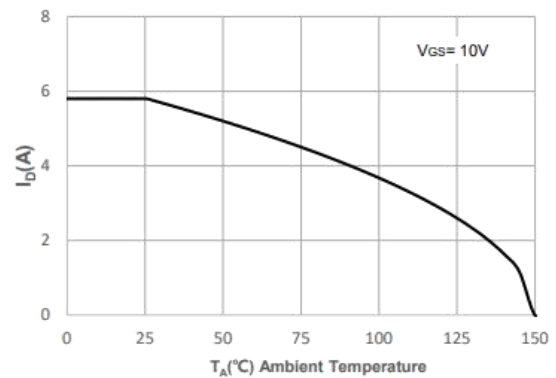
Normalized Breakdown voltage vs. Junction Temperature



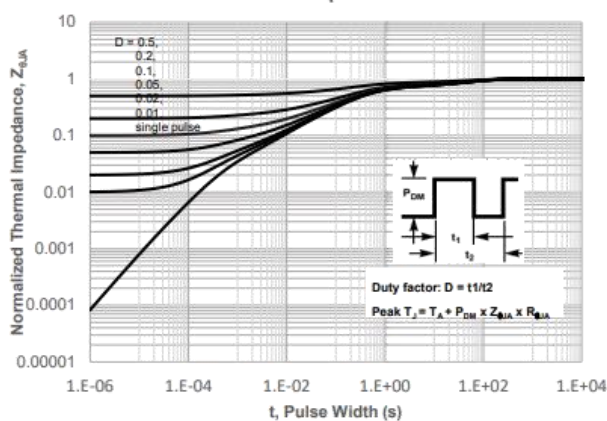
Normalized on Resistance vs. Junction Temperature



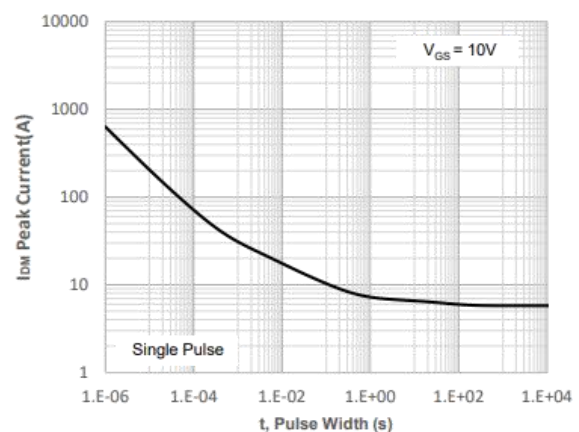
Maximum Safe Operating Area



Maximum Continuous Drain Current vs. Ambient Temperature

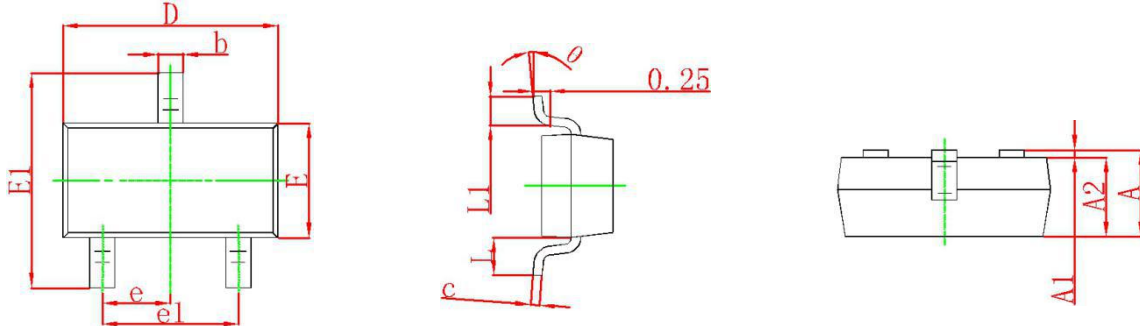


Normalized Maximum Transient Thermal Impedance



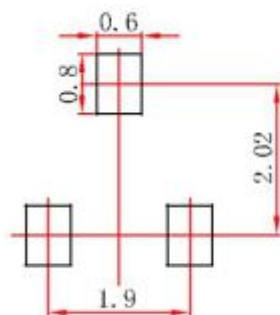
Peak Current Capacity

SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In 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
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.