

TF2317 P-Channel 20-V(D-S) MOSFET

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-20V	0.028Ω@-4.5V	-4.5A
	0.038Ω@-2.5V	
	0.050Ω@-1.8V	

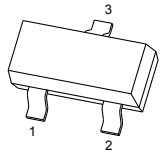
General FEATURE

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

APPLICATION

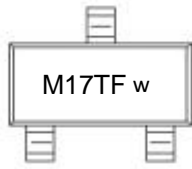
- Load Switch for Portable Devices
- DC/DC Converter

SOT-23-3L



1.GATE
2.SOURCE
3.DRAIN

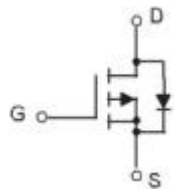
MARKING



M17TF w

*w: week code

Equivalent Circuit



Absolute Maximum Ratings ($T_A = 25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Rating	Unit
V_{DSS}	Drain-Source Voltage	-20	V
V_{GSS}	Gate-Source Voltage	±12	
I_D^*	Continuous Drain Current	-4.5	A
I_{DM}^*	300μs Pulsed Drain Current		
I_S^*	Diode Continuous Forward Current	-1	A
T_J	Maximum Junction Temperature	150	°C
T_{STG}	Storage Temperature Range	-55 to 150	
P_D^*	Maximum Power Dissipation	0.83	W
$R_{\theta JA}^*$	Thermal Resistance-Junction to Ambient	150	°C/W

Note : *Surface Mounted on 1in² pad area, t ≤ 10sec.



Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

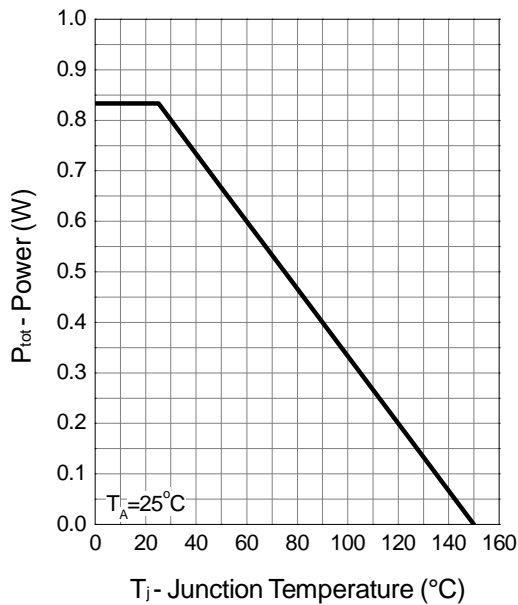
Symbol	Parameter	Test Conditions	TF2317			Unit
			Min.	Typ.	Max.	
STATIC CHARACTERISTICS						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=-250\mu A$	-20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-16V, V_{GS}=0V$	-	-	-1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=-250\mu A$	-0.5	-0.7	-1	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	± 100	nA
$R_{DS(ON)}^a$	Drain-Source On-State Resistance	$V_{GS}=-4.5V, I_{DS}=-4.5A$	-	26	28	m Ω
		$V_{GS}=-2.5V, I_{DS}=-2.5A$	-	32	38	
		$V_{GS}=-1.8V, I_{DS}=-2A$	-	45	50	
V_{SD}^a	Diode Forward Voltage	$I_{SD}=-1A, V_{GS}=0V$	-	-0.7	-1.3	V
GATE CHARGE CHARACTERISTICS^b						
Q_g	Total Gate Charge	$V_{DS}=-10V, V_{GS}=-4.5V, I_{DS}=-4.5A$	-	14	20	nC
Q_{gs}	Gate-Source Charge		-	2.1	-	
Q_{gd}	Gate-Drain Charge		-	4.7	-	
DYNAMIC CHARACTERISTICS^b						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$	-	7	-	Ω
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=-10V, \text{Frequency}=1.0MHz$	-	1520	-	pF
C_{oss}	Output Capacitance		-	225	-	
C_{rss}	Reverse Transfer Capacitance		-	165	-	
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=-10V, R_L=10\Omega, I_{DS}=-1A, V_{GEN}=-4.5V, R_G=6\Omega$	-	6	12	ns
t_r	Turn-on Rise Time		-	13	24	
$t_{d(OFF)}$	Turn-off Delay Time		-	86	156	
t_f	Turn-off Fall Time		-	42	77	
t_{rr}	Reverse Recovery Time	$I_{SD}=-4.5A, dI_{SD}/dt = 100A/\mu s$	-	21	-	ns
q_{rr}	Reverse Recovery Charge		-	9	-	nC

Note a : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

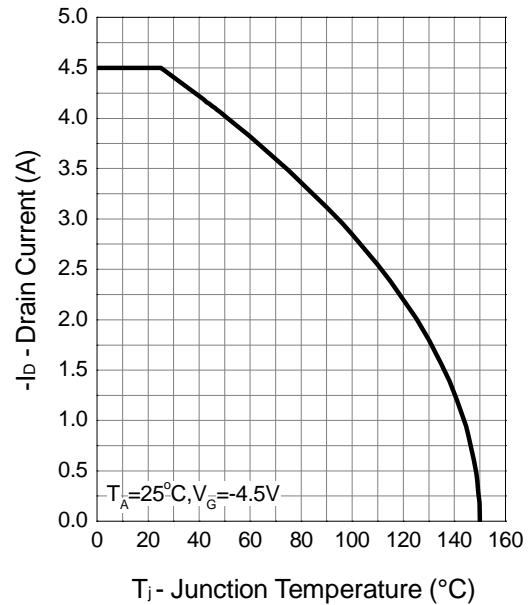
Note b : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

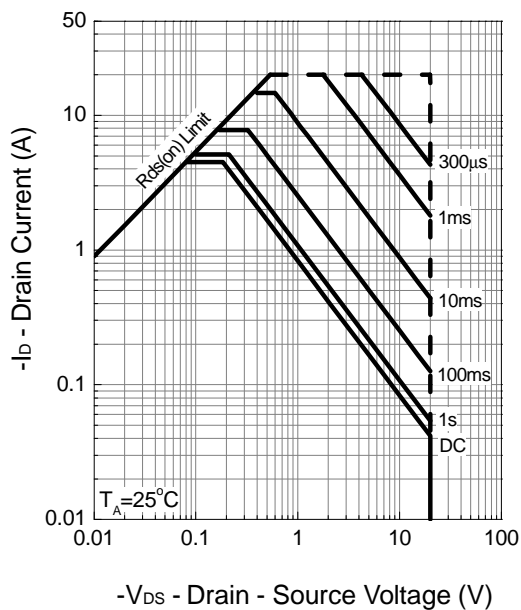
Power Dissipation



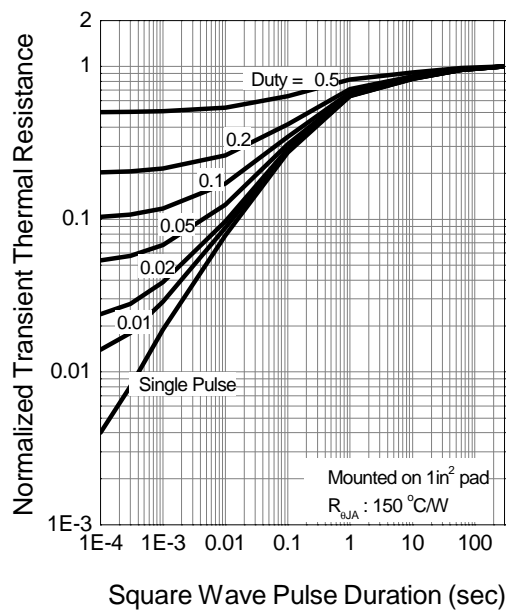
Drain Current



Safe Operation Area

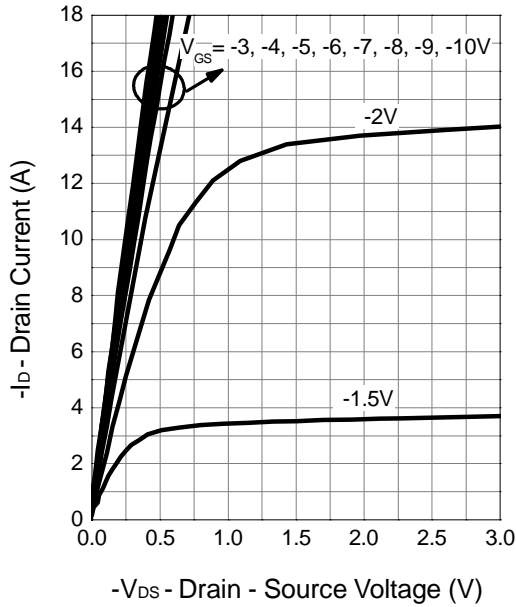


Thermal Transient Impedance

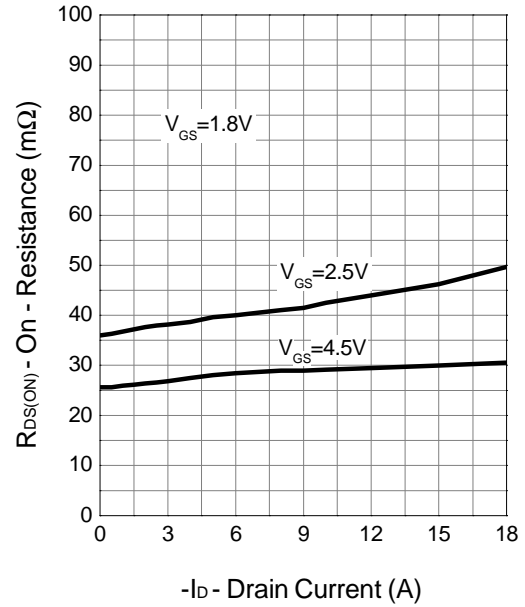


Typical Operating Characteristics (Cont.)

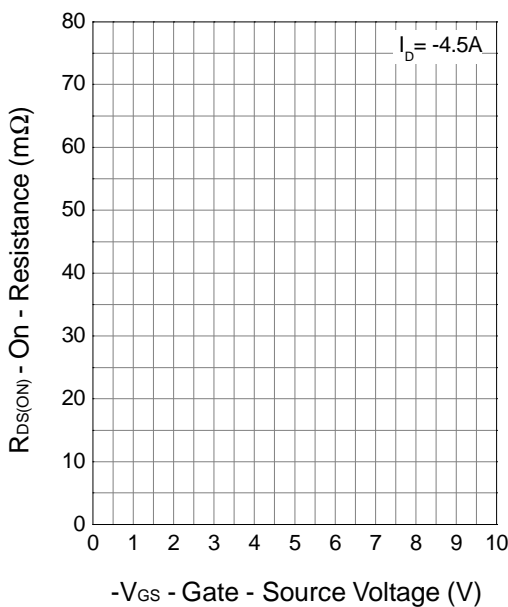
Output Characteristics



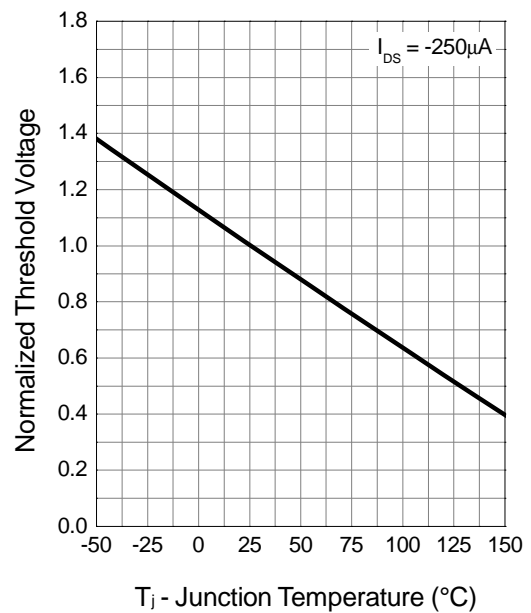
Drain-Source On Resistance



Drain-Source On Resistance

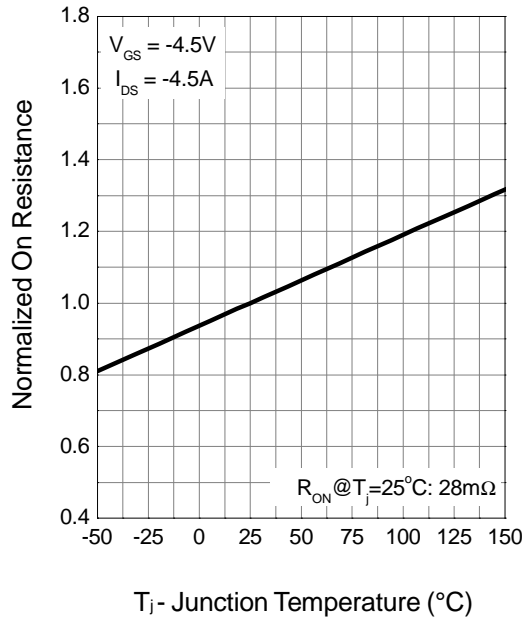


Gate Threshold Voltage

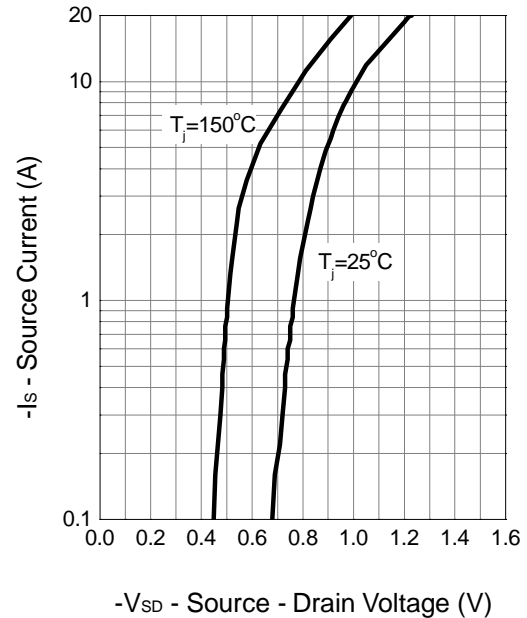


Typical Operating Characteristics (Cont.)

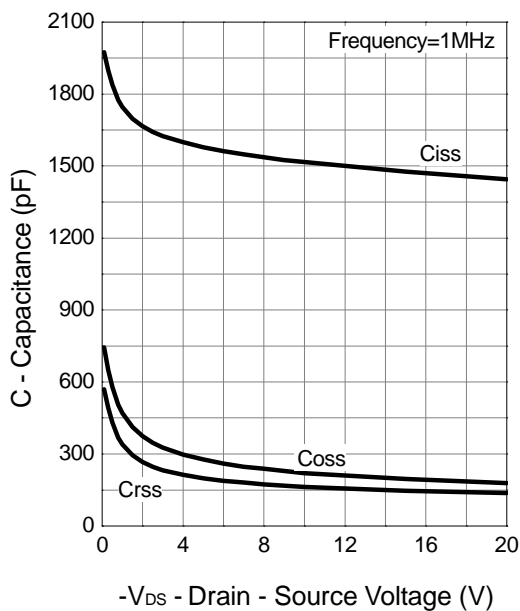
Drain-Source On Resistance



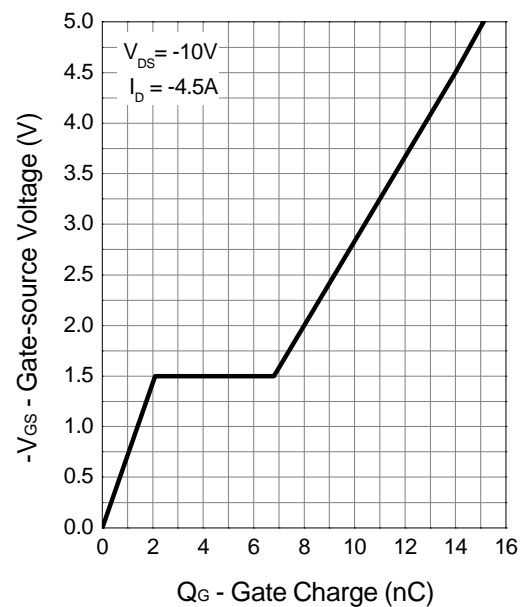
Source-Drain Diode Forward



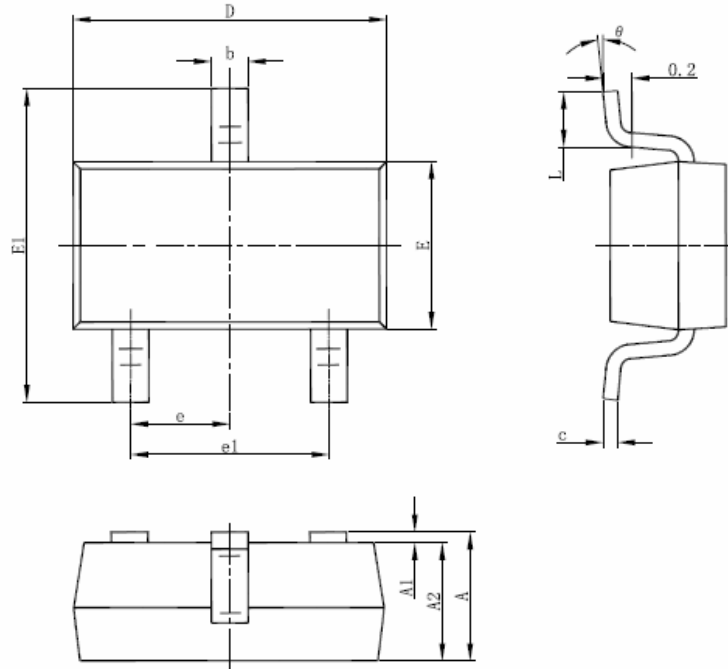
Capacitance



Gate Charge



SOT-23-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Notes

1. All dimensions are in millimeters.
2. Tolerance $\pm 0.10\text{mm}$ (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.