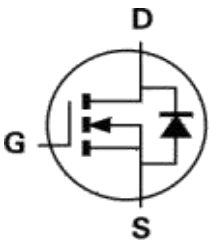
N-Channel Enhancement Mode Power MOSFET 18A/500V

Parameter	Value	Unit
VDS	500	V
RDS(on)	280	mΩ
ID	18	A





TO-220F

FEATURES

- Ultra low RDS(on)
- Low Gate Charge
- 100% Single Pulse avalanche energy test

APPLICATIONS

- Power factor correction (PFC)
- Switched mode power supplies (SMPS)

MAXIMUM RATED VALUES (at TJ = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	500	V
Gate-Source Voltage	V_{GS}	±30	V
Continue Drain Current	ID	18	A
Pulsed Drain Current (Note1)	I_{DM}	72	A
Power Dissipation	P_D	34	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	700	mJ
Operating Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	4	°C/W
Thermal Resistance,Junction to Ambient	$R_{\theta JA}$	49	°C/W

ELECTRICAL CHARACTERISTICS (at TJ = 25°C unless otherwise specified)

Parameter	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	BV_{DSS}	500	-	-	V
Drain-Source Leakage Current	V_{DS}=500V, V_{GS}=0V	I_{DSS}	-	-	1	μA
Gate Leakage Current	V_{GS}=± 30V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Gate-Source Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	$V_{GS(th)}$	2	-	4	V

Drain-Source On-State Resistance	V_{GS}=10 V, I_D=9A	$R_{DS(on)}$	-	0.28	0.35	Ω
Forward Transconductance	V_{DS}=15 V, I_D=8A	gfs	-	15	-	S
Input Capacitance	V_{GS}=0V, V_{DS}=25V, f=1MHz	C_{iss}	-	2839	-	pF
Output Capacitance		C_{oss}	-	258	-	pF
Reverse Transfer Capacitance		C_{rss}	-	28	-	pF
Turn-on Delay Time(Note2)	ID=18A, VDD=243V, RG=24Ω	$t_{d(ON)}$	-	41	-	ns
Rise Time(Note2)		t_r	-	53	-	ns
Turn-Off Delay Time(Note2)		$t_{d(OFF)}$	-	168	-	ns
Fall Time(Note2)		t_f	-	62	-	ns
Total Gate Charge(Note2)	ID=18A, VDD=250V, VGS=10V	Q_G	-	58	-	nC
Gate to Source Charge(Note2)		Q_{GS}	-	16	-	nC
Gate to Drain Charge(Note2)		Q_{GD}	-	19	-	nC

Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

SOURCE-DRAIN DIODE CHARACTERISTICS (at TJ = 25°C unless otherwise specified)

Parameter	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		IS	-	-	18	A
Maximun Body-Diode Pulsed Current(Note2)		ISM	-	-	72	A
Drain-Source Diode Forward Voltage	ISD=18A	VSD	-	-	1.2	V
Reverse Recovery Time(Note2)	ISD=18A, VGS=0V, d IF/dt =100A/μs	trr	-	423	-	ns
Reverse Recovery Charge(Note2)		Qrr	-	5.5	-	μC

Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

CHARACTERISTICS DIAGRAMS

Figure 1: Output Characteristics

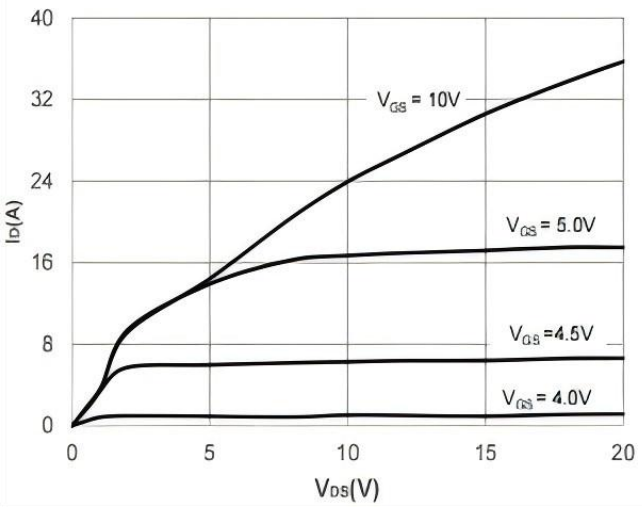


Figure 2: Typical Transfer Characteristics

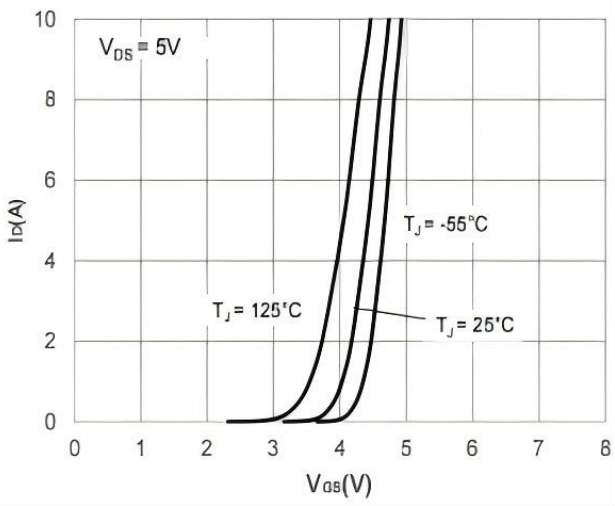


Figure 3: On-resistance vs. Drain Current

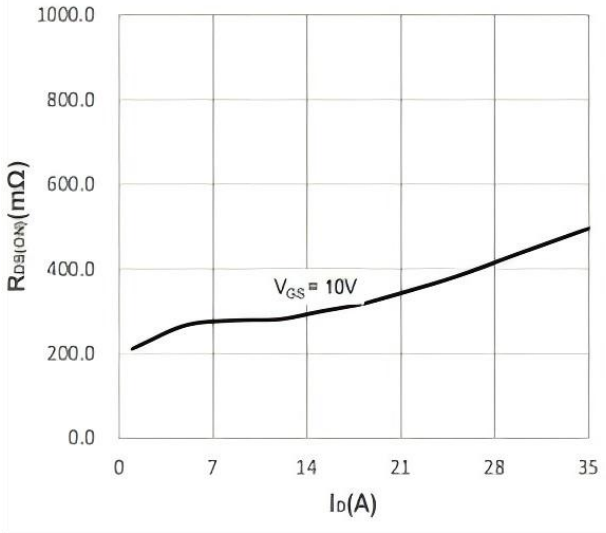


Figure 4: Body Diode Characteristics

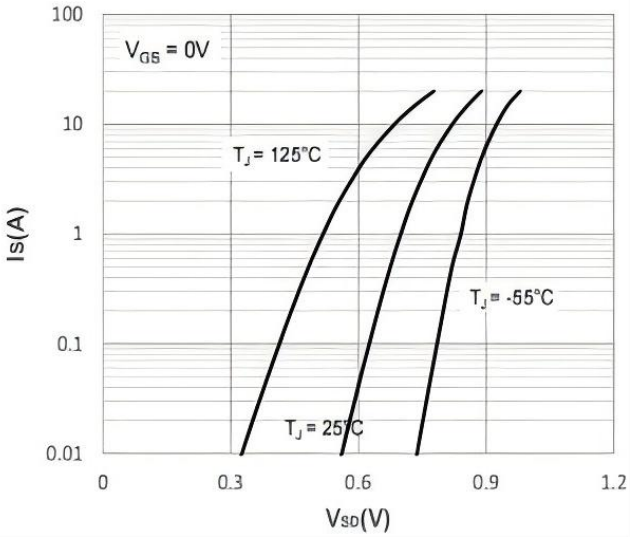


Figure 5: Gate Charge Characteristics

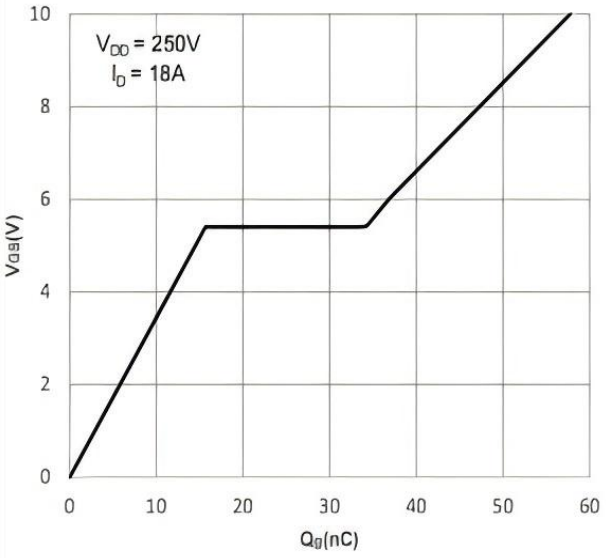


Figure 6: Capacitance Characteristics

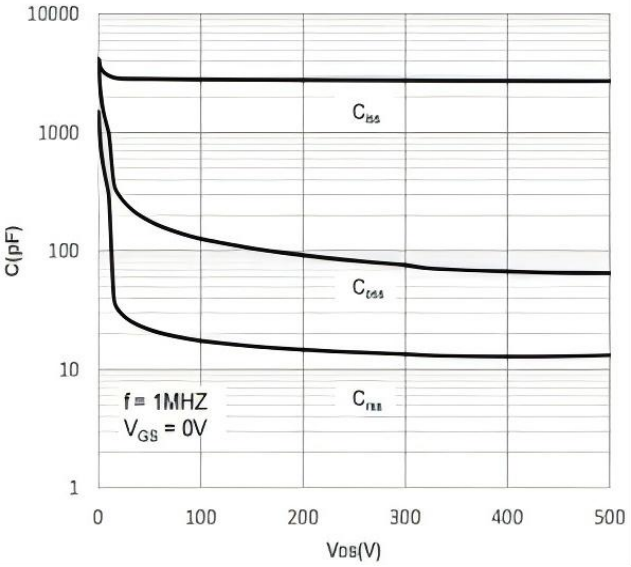


Figure 7: Normalized Breakdown voltage vs. Junction Temperature

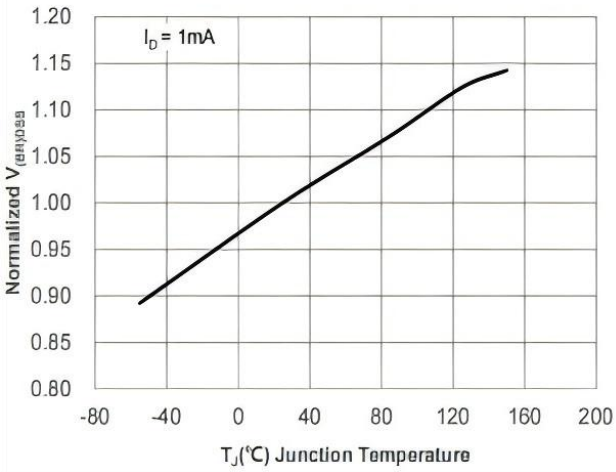


Figure 8: Normalized on Resistance vs. Junction Temperature

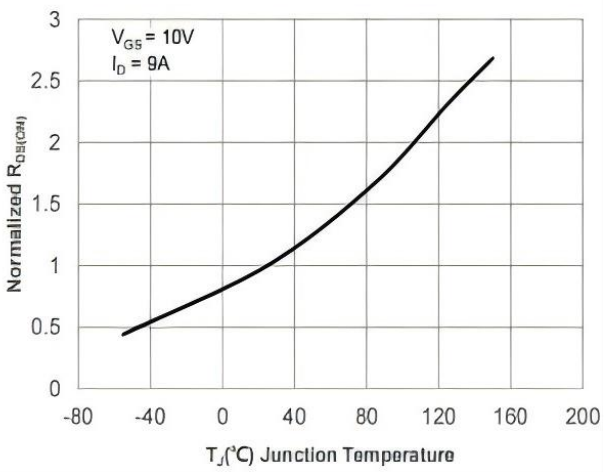


Figure 9: Maximum Safe Operating Area

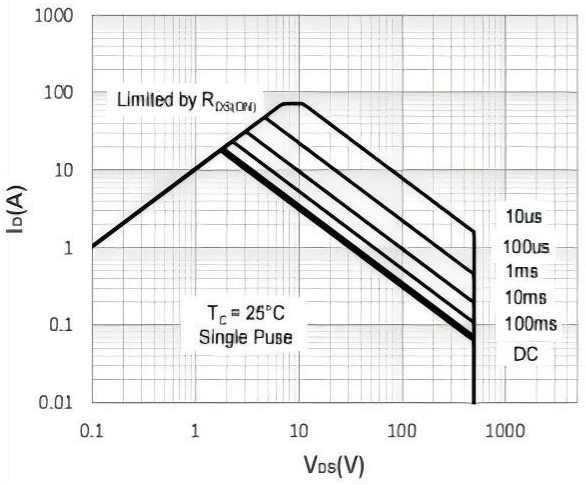


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

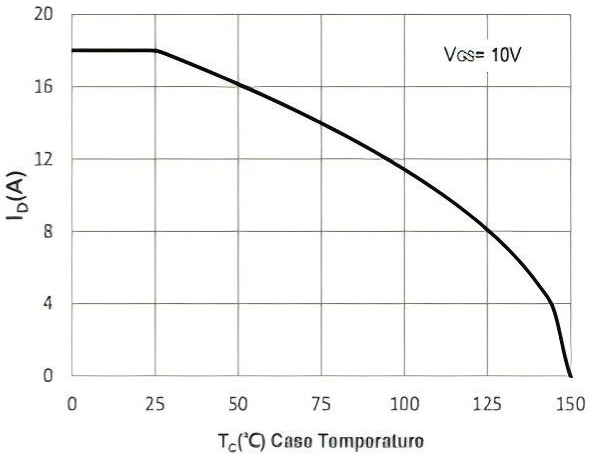


Figure 11: Normalized Maximum Transient Thermal Impedance

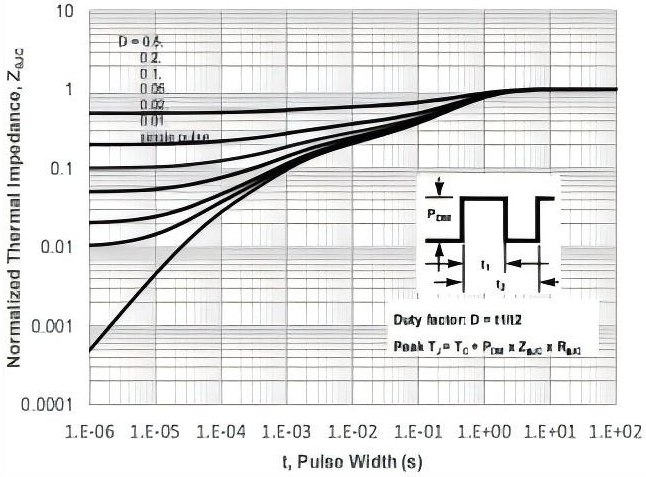
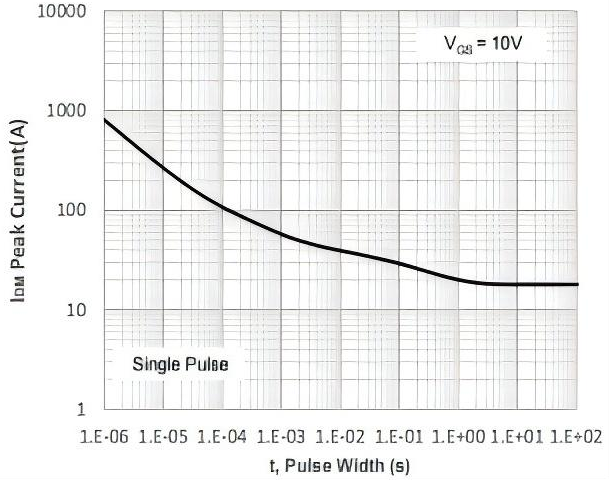
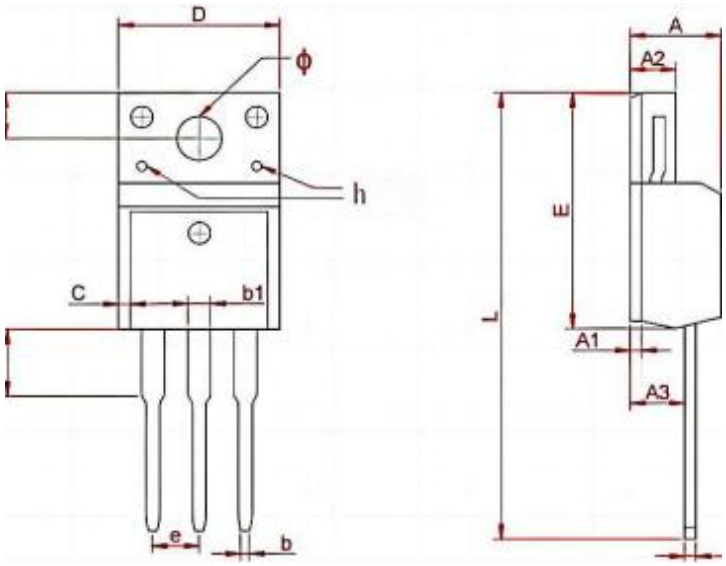


Figure 12: Peak Current Capacity



PACKAGE OUTLINE



Symbol	Dimensions in mm	
	Min	Max
A	4.300	4.750
A1	0.7 REF	
A2	2.300	2.850
A3	2.500	2.900
b	0.380	0.420
b1	1.220	1.280
C	1.08	1.200
c	0.480	0.520
D	10.15	10.450
E	15.700	15.950
e	2.574 TYP	
F	3.470 REF	
y	3.200 REF	
h	0.000	0.800
L	28.780	28.900
L1	2.990	3.100

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