18A 200V N-Channel Power MOSFET

DESCRIPTION：

·Fast switching

·Low on resistance

·Low gate charge

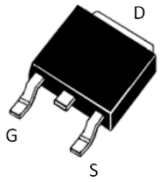
·Low reverse transfer capacitances

·100% single pulse avalanche energy test

·100% ΔV_{DS} test

·RoHS standard

V_{DSS}	200V
I_D	18A
$R_{DS(ON)\_Typ.}$	0.12Ω



TO-252

TYPICAL APPLICATIONS：

·High efficiency switch mode power supplies

·Power switch circuit of adaptor and charger

·UPS

·Inverter

MAXIMUM RATINGS (at T_C = 25 °C, unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	200	V
Gate-Source Voltage		V_{GSS}	±30	V
Continuous Drain Current	Tc=25℃ Tc=100℃	I_D	18 11.3	A
Pulsed Drain Current (1)		I_{DM}	72	A
Single Pulsed Avalanche Energy (2)		E_{AS}	500	mJ
Peak Diode Recovery dv/dt(3)		dv/dt	5	V/ns
Power dissipation	T_A=25℃ T_C=25℃	P_{tot}	1.25 100	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	℃
Maximum Temperature for soldering		T_L	300	℃

Notes： 1. Repetitive rating, pulse width limited by maximum junction temperature.

2. L=10mH, I_D=10A,V_{DD}=50V,V_{GATE}=200V,Start T_J=25℃.

3. I_{SD}=18A,di/dt ≤100A/μs, V_{DD}≤BV_{DSS}, Start T_J=25℃

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction to Ambient Junction to Case	$R_{\theta JA}$ $R_{\theta JC}$	100 1.25	℃/W

ELECTRICAL CHARATERISTICS (at T_J = 25 °C, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage VGS = 0V, ID = 250uA	BV_{DSS}	200			V
Zero Gate Voltage Drain Current VDS = 200 V, VGS = 0 V, T_C = 25 °C VDS = 160 V, VGS = 0 V, T_C = 125 °C	I_{DSS}			10 100	uA
Gate-Source Leakage Current VGS = ±30V, VDS = 0V	I_{GSS}			±100	nA
Gate-Source threshold voltage VDS = VGS, ID = 250uA	$V_{GS(th)}$	2		4	V
Drain-Source On-State Resistance VGS = 10V, ID = 9A	$R_{DS(on)}$		0.12	0.18	mΩ
Forward Transfer Conductance VDS=15V,ID=9A	g_{fs}		8.5		S
Input capacitance f=1MHz, VDS= 25 V, VGS=0 V	C_{iss}		1136		pF
Output capacitance f=1MHz, VDS= 25 V, VGS=0 V	C_{oss}		183		pF
Reverse transfer capacitance f=1MHz, VDS= 25 V, VGS=0 V	C_{rss}		16.4		pF
Total Gate Charge VDD= 160V, ID= 18A,VGS= 10V	Q_G		20.4		nC
Gate to Source Charge VDD= 160V, ID= 18A,VGS= 10V	Q_{GS}		6.9		nC
Gate to Drain Charge VDD= 160V, ID= 18A,VGS= 10V	Q_{GD}		7.3		nC
Turn-on delay time VDD= 100 V, VGS= 10V, ID= 18A, R_G =10Ω	$td_{(ON)}$		19		ns
Rise time VDD= 100 V, VGS= 10V, ID= 18A, R_G =10Ω	tr		33		ns
Turn-off delay time VDD= 100 V, VGS= 10V, ID= 18A, R_G =10Ω	$td_{(OFF)}$		35		ns
Fall time VDD= 100 V, VGS= 10V, ID= 18A, R_G =10Ω	tf		8		ns

Body Diode

ELECTRICAL CHARATERISTICS (at T_J = 25 °C, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Diode Forward Voltage VGS = 0V, I_S = 18A	V_{FSD}			1.5	V
Diode Forward Current	I_S			18	A
Revers Recovery Time IF= 18A, di/dt = 100A/us, VGS = 0V	Trr		187		ns
Revers Recovery Charge IF= 18A, di/dt = 100A/us, VGS = 0V	Qrr		925		nC

Typical Performance Characteristics

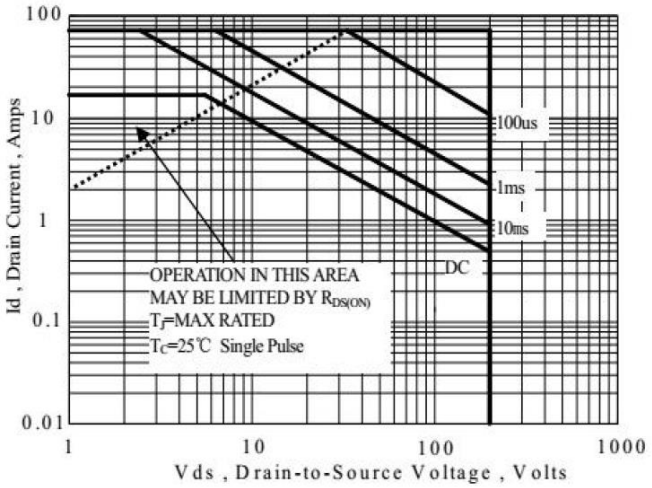


Figure 1 Maximum Forward Bias Safe Operating Area

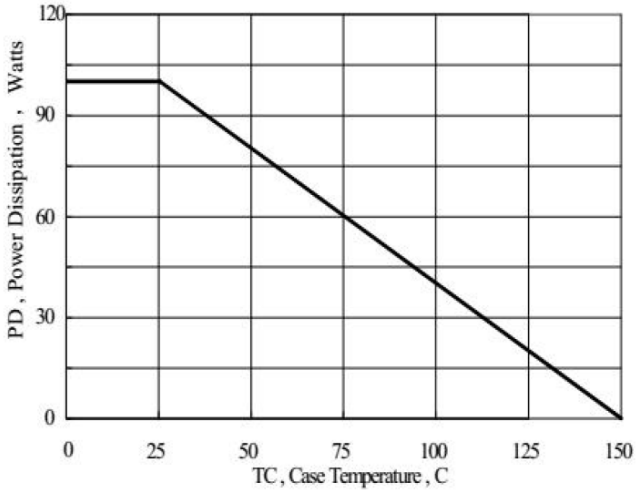


Figure 2. Maximum Power Dissipation vs Case Temperature

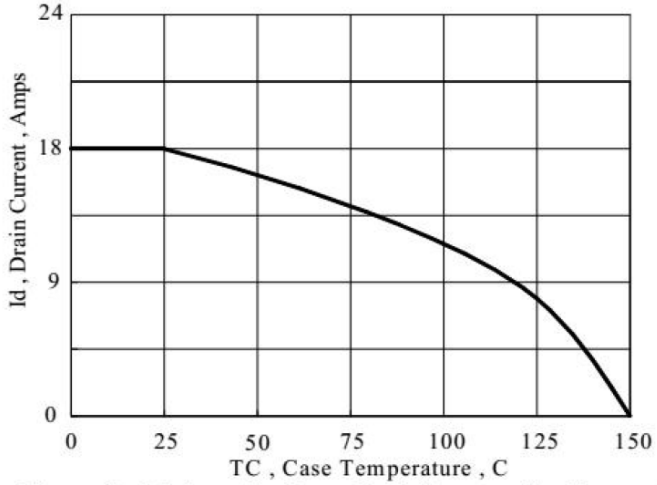


Figure 3. Maximum Continuous Drain Current vs Case Temperature

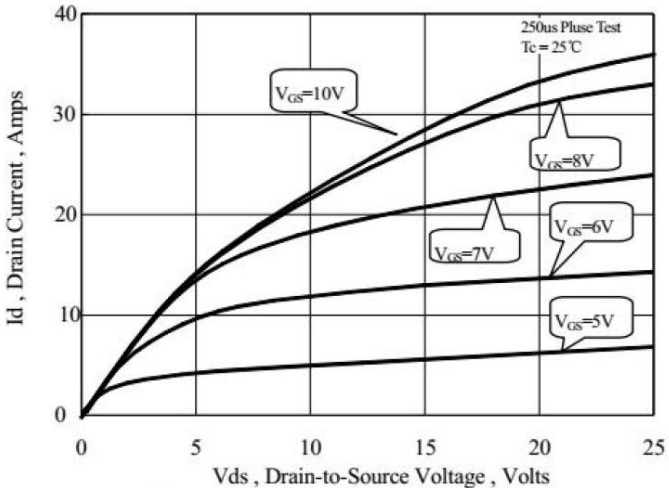


Figure 4. Typical Output Characteristics

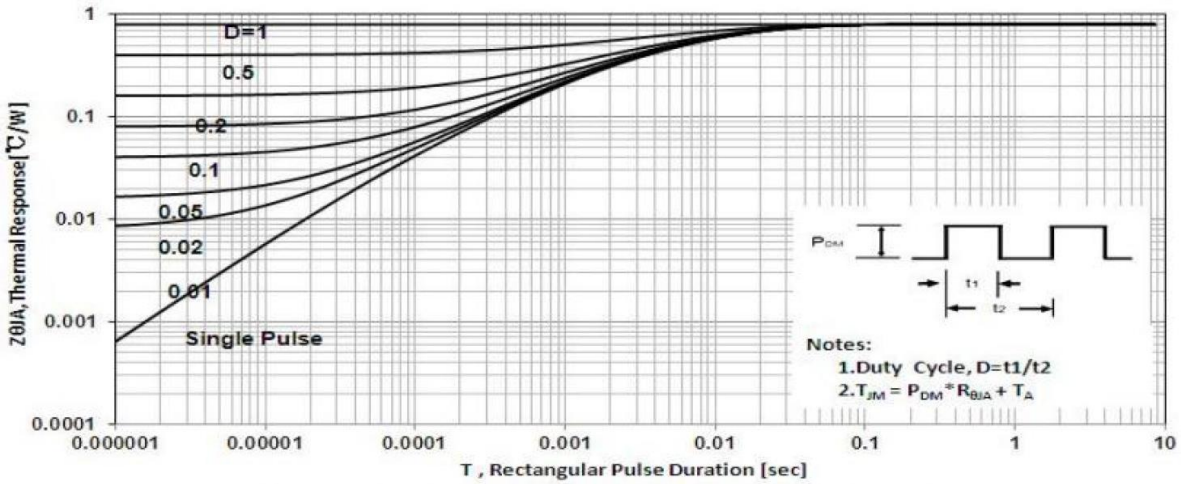


Figure 5. Maximum Effective Thermal Impendance . Junction to Case

Typical Performance Characteristics

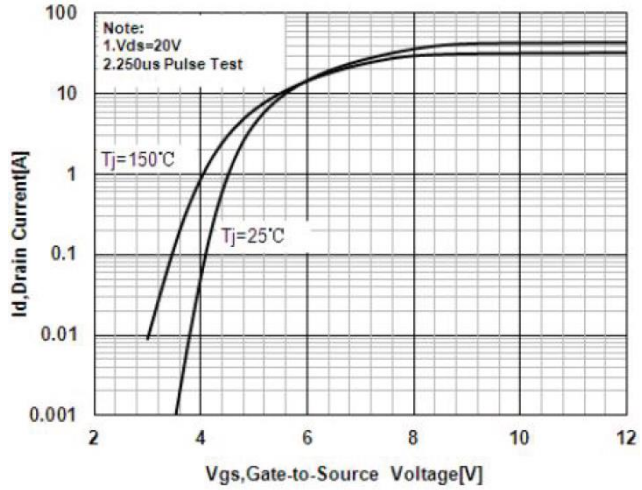


Figure 6. Typical Transfer Characteristics

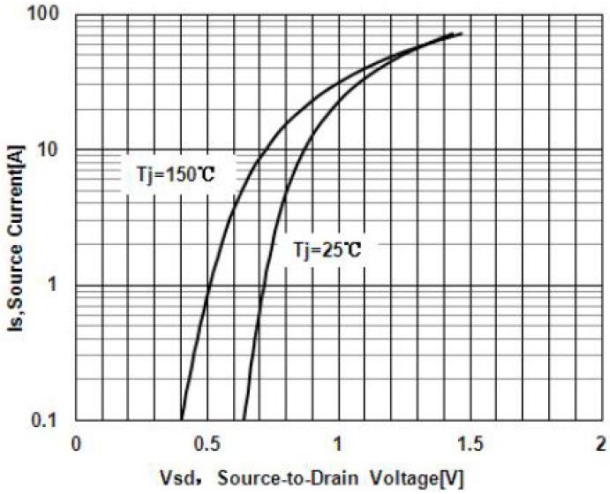


Figure 7. Typical Body Diode Transfer Characteristics

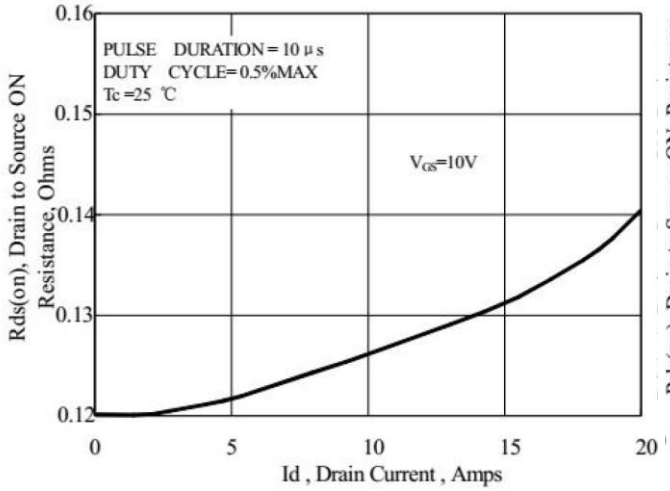


Figure 8. Typical Drain to Source ON Resistance vs Drain Current

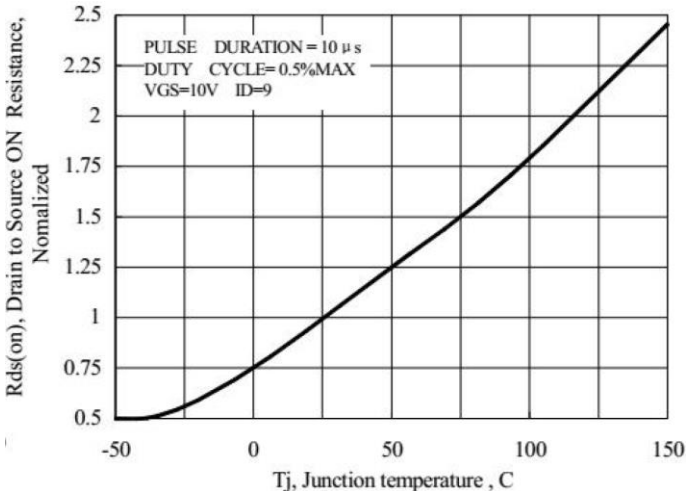


Figure 9. Typical Drian to Source on Resistance vs Junction Temperature

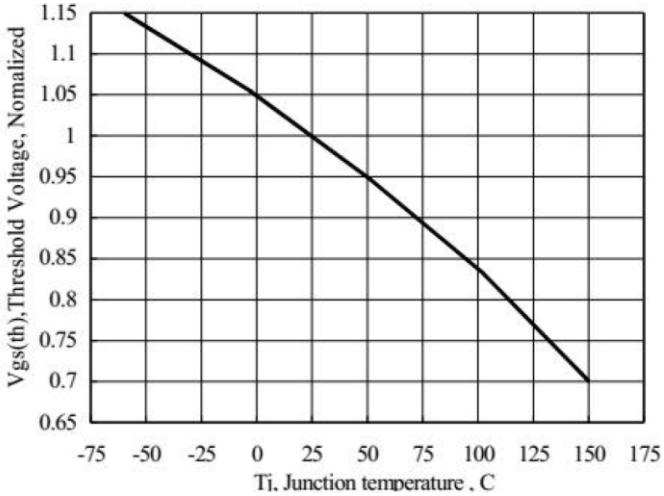


Figure 10. Typical Theshold Voltage vs Junction Temperature

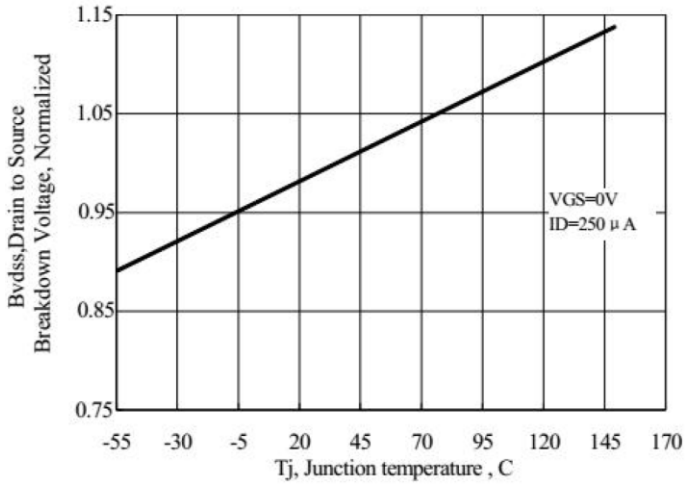


Figure 11.Typical Breakdown Voltage vs Junction Temperature

Typical Performance Characteristics

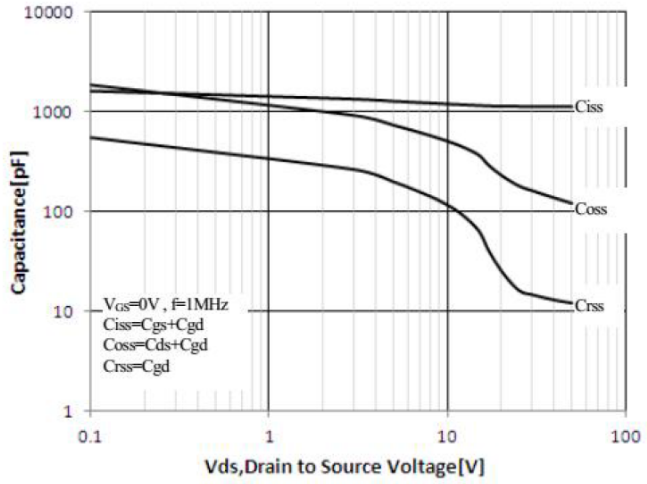


Figure 1 Typical Capacitance vs Drain to Source Voltage

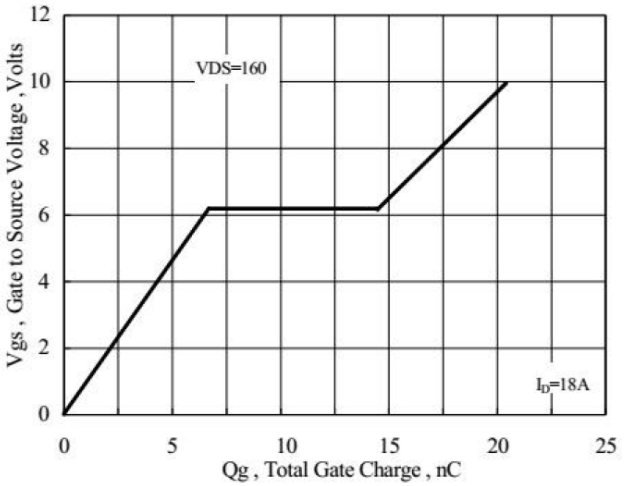
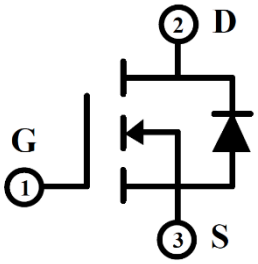
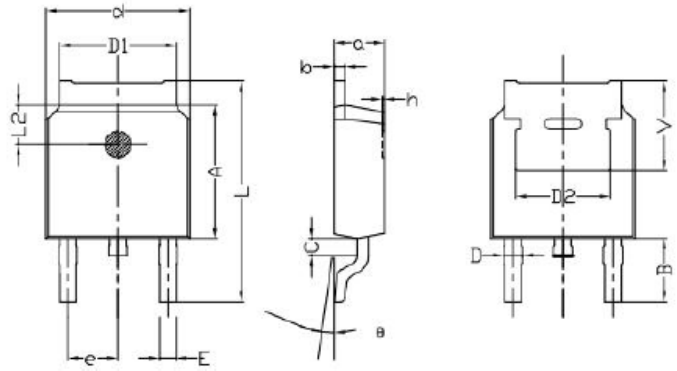


Figure 2. Typical Gate Charge vs Gate to Source Voltage

·Circuit diagram



·Package outlines : Dimensions in (mm)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	min.	max.	min.	max.
a	2.20	2.40	0.087	0.095
b	0.46	0.58	0.018	0.023
c	0.70	0.90	0.028	0.035
D	0.80	1.00	0.032	0.039
d	6.30	6.70	0.248	0.264
D1	5.00	5.50	0.197	0.217
D2	TYP 4.83		TYP 0.190	
A	5.80	6.20	0.228	0.244
e	2.19	2.39	0.086	0.094
L	9.40	10.40	0.370	0.409
B	2.6	3.2	0.102	0.126
L2	1.5	1.8	0.059	0.071
θ	0	8	0	8
h	0	0.3	0	0.012
V	5.25	5.85	0.207	0.230
E	0.6	0.8	0.024	0.032

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