100V N-Channel Power MOSFET

DESCRIPTION：

·Low On-Resistance

·Excellent FoM (figure of merit)

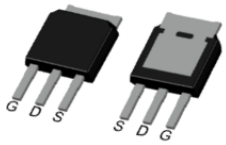
·100% AVDS & UIS & Rg Tested

·Green Molding Compound

·Moisture Sensitivity: Level 3 per J-STD-020

·UL Flammability Classification Rating 94V-0

V_{DSS}	100V
I_D	73A
$R_{DS(ON)_Typ.}$ @V_{GS}=10V	6.1mΩ



TO-251

TYPICAL APPLICATIONS：

·Motor controls

·DC/DC in Telecoms and Inductrial

·High frequency switching, synchronous rectification

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

Characteristic	Condition	Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current(1)	Tc=25℃ Tc=100℃	I_D	73 46	A
Pulsed Drain Current (2)		I_{DM}	292	A
Single Pulsed Avalanche Energy (3)		E_{AS}	250	mJ
Single Pulse Avalanche Current	L= 10.0mH	I_{AS}	31	A
Power dissipation	Tc=25℃ Tc=100℃	P_D	74 29	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	℃

Notes： 1. This current is chip limited, which is calculated based on Rthjc..

2. This current is calculated on single pulse with 10μs Pulse.

3. Defined by design, not subject to production test, EAS condition: TJ=25°C, VDD=50V, VGS=10V, L=1.0mH.

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction to Ambient Junction to Case	$R_{\theta JA}$ $R_{\theta JC}$	38 1.7	℃/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	$V_{(BR)DSS}$	100			V
Zero Gate Voltage Drain Current VDS = 100 V, VGS = 0 V ,Tj=25℃ VDS = 100 V, VGS = 0 V ,Tj=125℃	I_{DSS}			1.0 100	uA
Gate-Source Leakage Current VGS = ±20V, VDS = 0V	I_{GSS}			±100	nA
Gate-Source threshold voltage VDS = VGS, ID = 250uA	$V_{GS(th)}$	1.2	1.7	2.5	V
Drain-Source On-State Resistance VGS = 10V, ID = 20A VGS = 4.5V, ID = 15A	$R_{DS(on)}$		6.1 7.9	7.4 9.9	mΩ
Forward Transconductance VDS = 5.0V, ID = 20A	gfs		44		S
Diode Forward Voltage VGS = 0V, I_{SD} =2.0A	V_{SD}		0.7	1.2	V
Gate Resistance f=1MHz	R_g		1.3		Ω
Input capacitance f=1MHz, VDS=50 V, VGS=0 V	C_{iss}		1585		pF
Output capacitance f=1MHz, VDS=50 V, VGS=0 V	C_{oss}		693		pF
Reverse transfer capacitance f=1MHz, VDS=50 V, VGS=0 V	C_{rss}		13		pF
Turn-on delay time VDS=50 V, ID=20A, VGS=10V, R_{GEN}=3.0Ω	td (ON)		4.6		ns
Rise time VDS=50 V, ID=20A, VGS=10V, R_{GEN}=3.0Ω	tr		10		ns
Turn-off delay time VDS=50 V, ID=20A, VGS=10V, R_{GEN}=3.0Ω	td (OFF)		23		ns
Fall time VDS=50 V, ID=20A, VGS=10V, R_{GEN}=3.0Ω	tf		21		ns
Total Gate Charge VDS= 50V, ID= 20A, VGS= 10V VDS= 50V, ID= 20A, VGS= 4.5V	Q_G		27 13.2		nC
Gate to Source Charge VDS= 50V, ID= 20A, VGS= 10V	Q_{GS}		4.9		nC
Gate to Drain Charge VDS= 50V, ID= 20A, VGS= 10V	Q_{GD}		5.3		nC
Gate Plateau Voltage VDS= 50V, ID= 20A, VGS= 10V	$V_{plateau}$		3.3		nC
Revers Recovery Time I_F =20A, di_F/dt = 100A/us ,Tj=25℃	Trr		49		ns
Revers Recovery Charge I_F =20A, di_F/dt = 100A/us ,Tj=25℃	Qrr		82		uC
Peak Reverse Recovery Current I_F =20A, di_F/dt = 100A/us ,Tc=25℃	IS			73	A

Typical Performance Characteristics

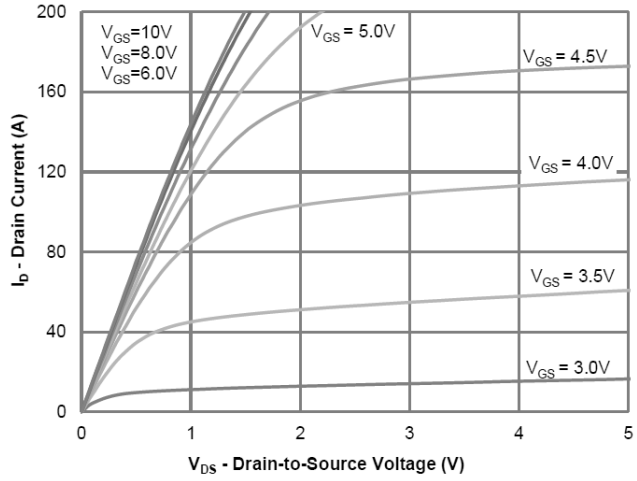


Figure 1. Output Characteristics

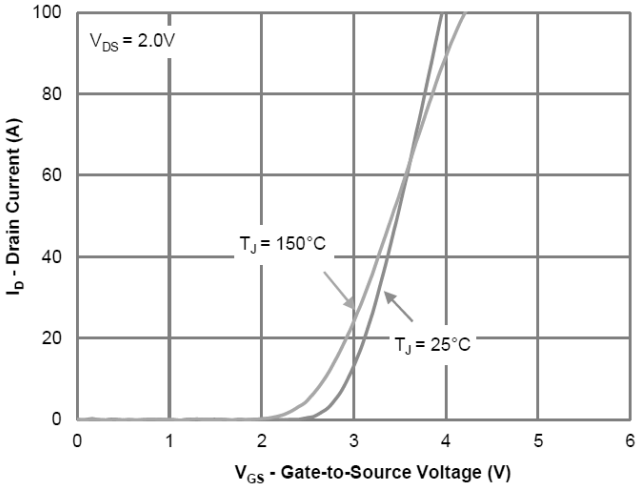


Figure 2. Transfer Characteristics

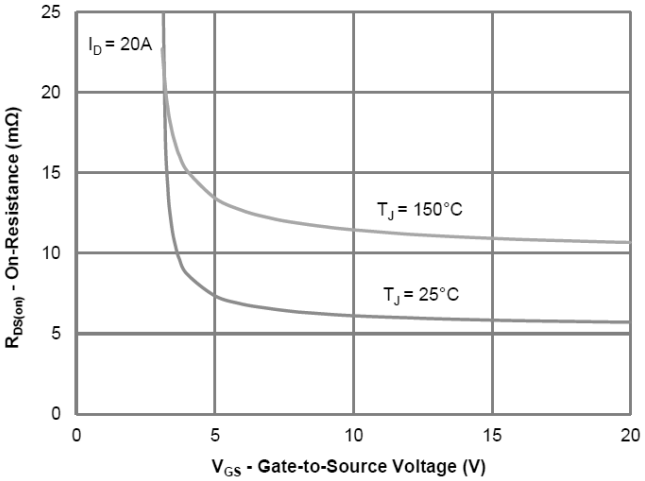


Figure 3. On-Resistance vs. Gate-Source Voltage

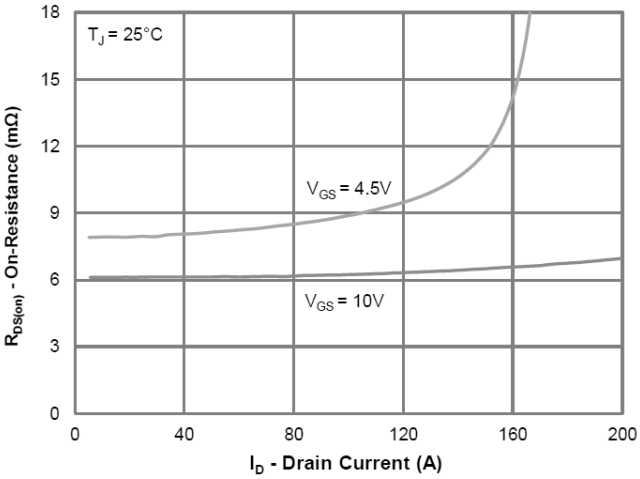


Figure 4. On-Resistance vs. Drain Current and Gate Voltage

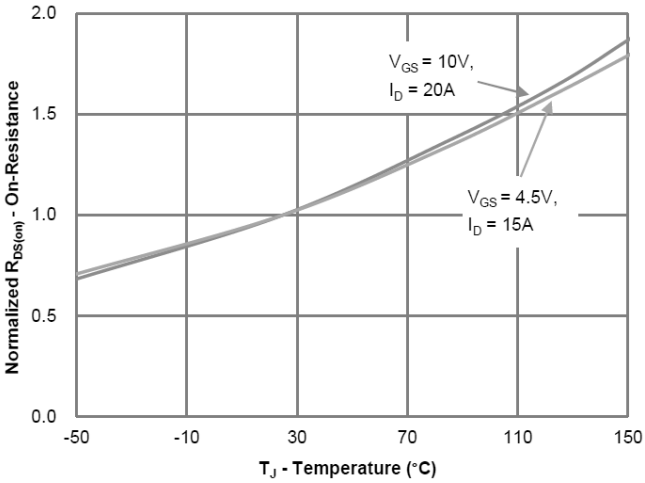


Figure 5. On-Resistance vs. Junction Temperature

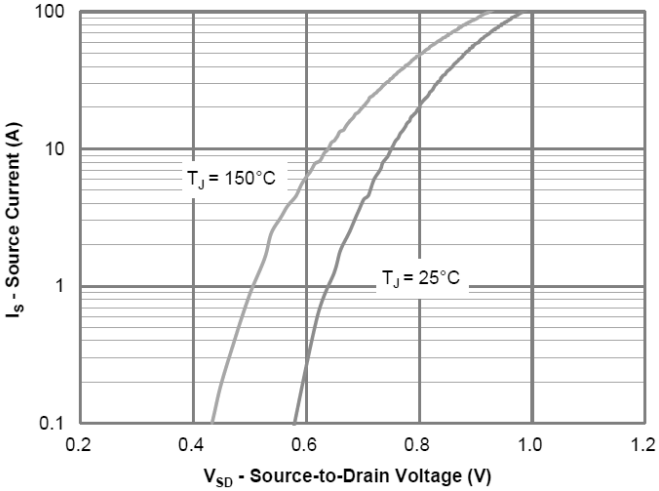


Figure 6. Source-Drain Diode Forward Voltage

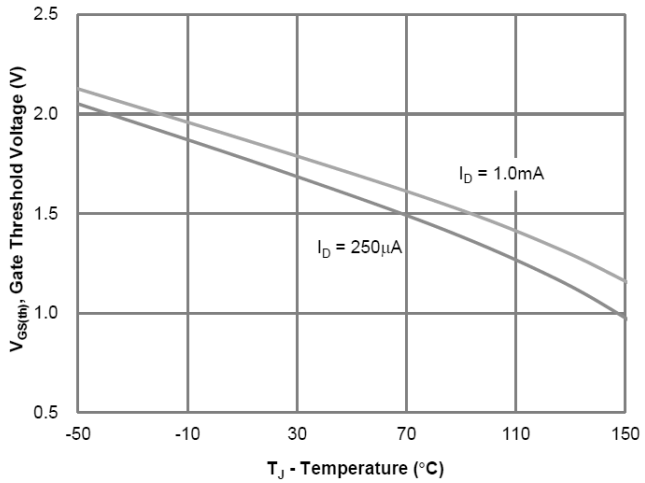


Figure 7. Gate Threshold Variation vs. Junction Temperature

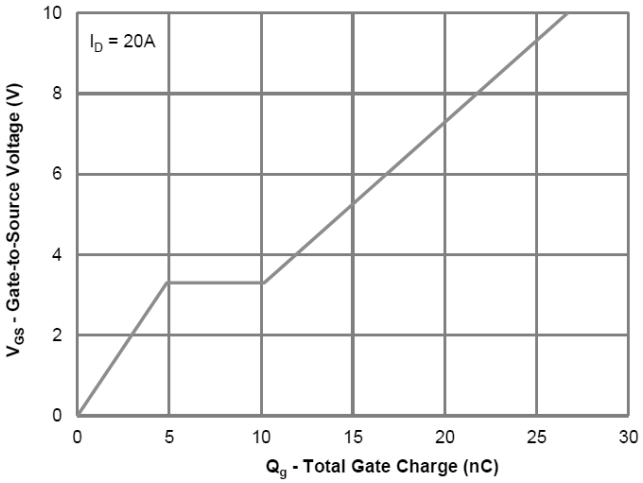


Figure8. Gate Charge Characteristics

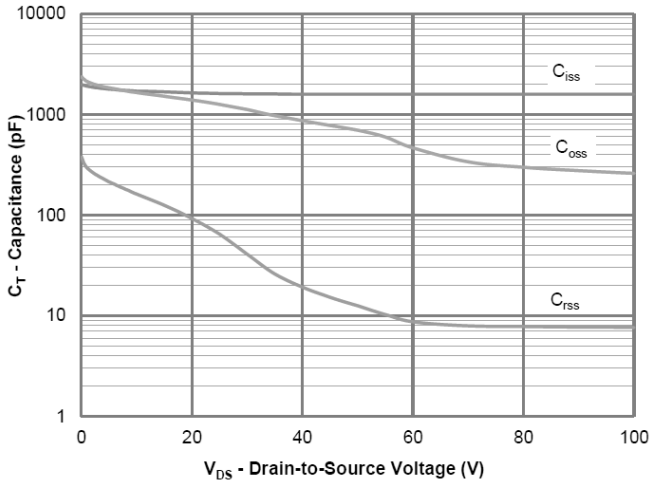


Figure 9. Capacitance Characteristics

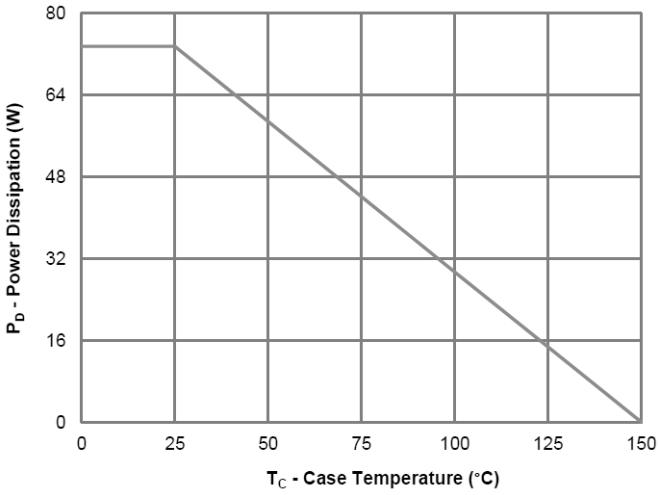


Figure 10. Power Derating

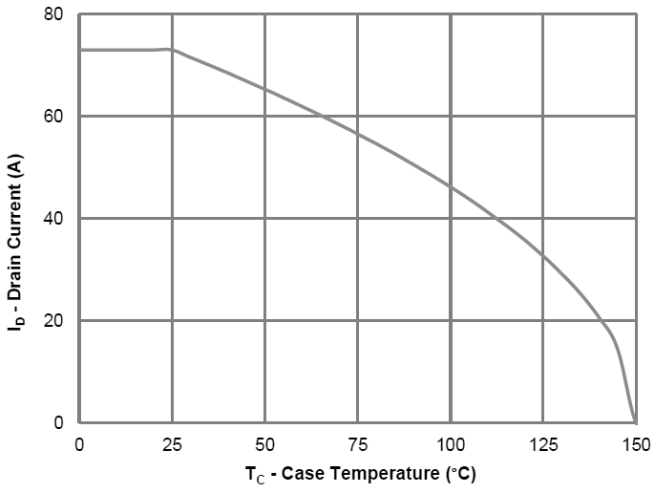


Figure 11. Current Derating

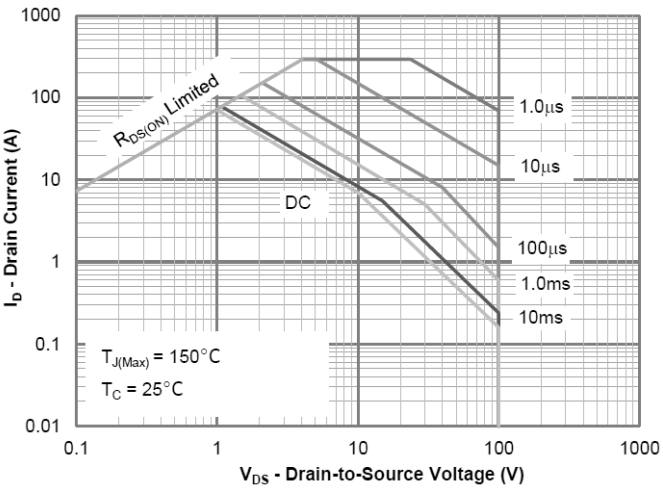


Figure 12. Safe Operating Area

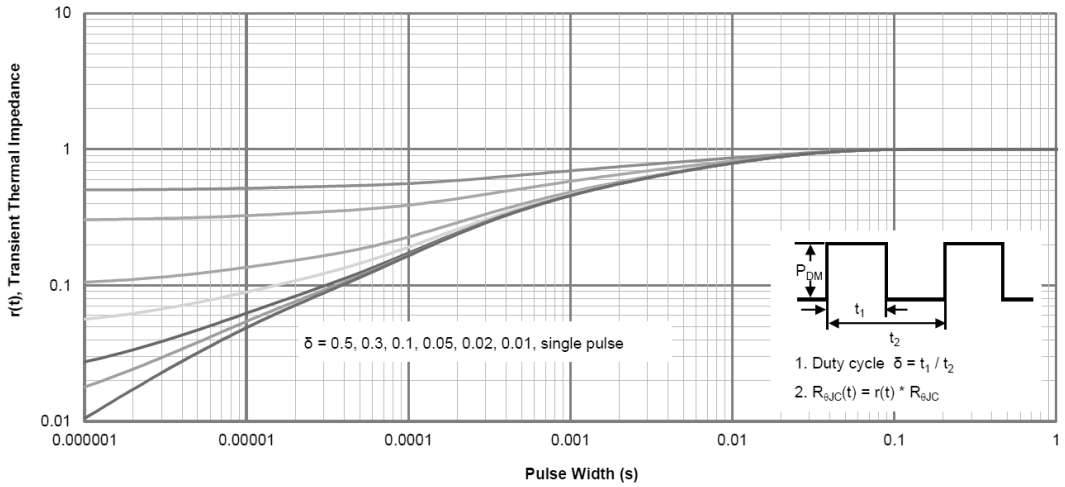
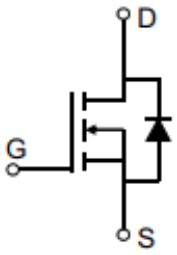
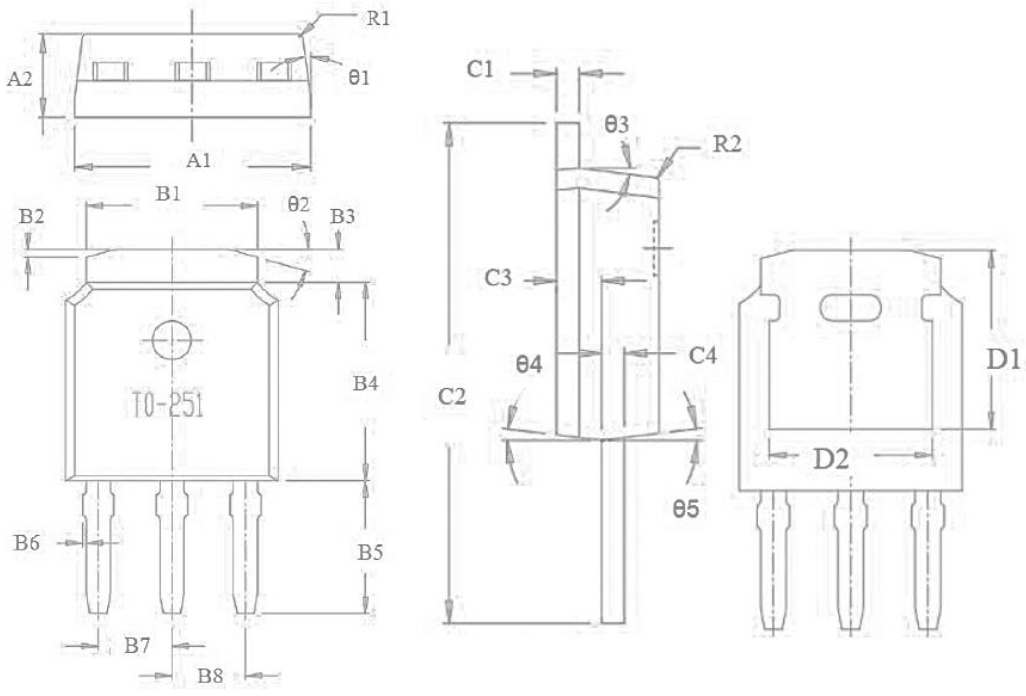


Figure 13. Normalized Maximum Transient Thermal Impedance

·Circuit diagram



·Package outlines : Dimensions in (mm)



SYMBOL	MILLIMETER(mm)	
	MIN	MAX
A1	6.55	6.65
A2	2.25	2.35
B1	5.234	5.434
B2	0.146	0.346
B3	0.962	1.062
B4	6.05	6.15
B5	3.9	4.3
B6	0.076 MAX~6X	
B7	2.236	2.336
B8	2.236	2.336
C1	0.458	0.558
C2	11.012	11.412
C3	0.96	1.06
C4	0.53	0.63
D1	5.25	5.35
D2	4.78	4.88
θ1	7° ~2X	
θ2	15°	
θ3	7°	
θ4	7°	
θ5	7°	
R1	0.1~2X	
R2	0.1	

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