100V N-Channel Power MOSFET

DESCRIPTION：

·Ultra-low RDS(ON)

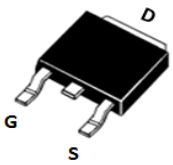
·Low Gate Charge

·100% UIS Tested, 100% Rg Tested

·Pb-free Lead Plating

·Halogen-free and RoHS-compliant

V_{DS}	100V
I_D	99A
$R_{DS(ON)_MAX}$ @V_{GS}=10V	5.4mΩ



TO-252

TYPICAL APPLICATIONS：

·Power Managerment in Telecom., Industrial Automation, CE

·Current Switching in DC/DC & AC/DC (SR) Sub-systems

·Motor Driving in Power Tool, E-vehicle, Robotics

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	Tc=25℃ Tc=100℃	I_D	99 70	A
Pulsed Drain Current (1)		I_{DM}	265	A
Avalanche Current		I_{AS}	50	A
Avalanche Energy (2)		E_{AS}	125	mJ
Power dissipation	Tc=25℃ Tc=100℃	P_D	121 60	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	℃

Notes： 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2. This single-pulse measurement was taken under the following condition [L = 100uH, V_{GS}=10V. V_{DD} = 50V while its value is limited by T_{J_Max} = 175°C.

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction to Ambient Junction to Case	$R_{\theta JA}$ $R_{\theta JC}$	48 1.24	℃/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 = 80V, VGS = 0 V, T_J = 25 °C VDS = 80V, VGS = 0 V, T_J = 55 °C	I_{DSS}			1.0 5.0	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	$R_{DS(on)}$		5.4 6.6	6.6 8.0	mΩ
Forward Transconductance VDS = 5V, ID = 20A	g_{FS}		112		S
Diode Forward Voltage VGS = 0V, I_S =1A	V_{SD}		0.71	1.0	V
Maximum Continuous Body Diode Forward Current	IS			121	A
Gate Resistance f=1MHz	R_g		1.8		Ω
Input capacitance f=1MHz, VDS=50V, VGS=0 V	C_{iss}		2604		pF
Output capacitance f=1MHz, VDS=50V, VGS=0 V	C_{oss}		567		pF
Reverse transfer capacitance f=1MHz, VDS=50V, VGS=0 V	C_{rss}		9.6		pF
Total Gate Charge VDS= 75V, ID= 20A,VGS= 10V VDS= 75V, ID= 20A,VGS= 6.0V	Q_G		42 28		nC
Gate to Source Charge VDS= 75V, ID= 20A,VGS= 0 to 10V	Q_{GS}		6.5		nC
Gate to Drain Charge VDS= 75V, ID= 20A,VGS= 0 to 10V	Q_{GD}		9.7		nC
Turn-on delay time VDD=75 V, VGS= 10V, R_L=3.75Ω, R_{GEN}=6Ω	$t_{d\ (ON)}$		11.3		ns
Rise time VDD=75 V, VGS= 10V, R_L=3.75Ω, R_{GEN}=6Ω	tr		17.6		ns
Turn-off delay time VDD=75 V, VGS= 10V, R_L=3.75Ω, R_{GEN}=6Ω	$t_{d\ (OFF)}$		46		ns
Fall time VDD=75 V, VGS= 10V, R_L=3.75Ω, R_{GEN}=6Ω	tf		36		ns
Revers Recovery Time IF=15A, di/dt = 100A/us	Trr		49		ns
Revers Recovery Charge IF=15A, di/dt = 100A/us	Qrr		44		nC

Typical Performance Characteristics

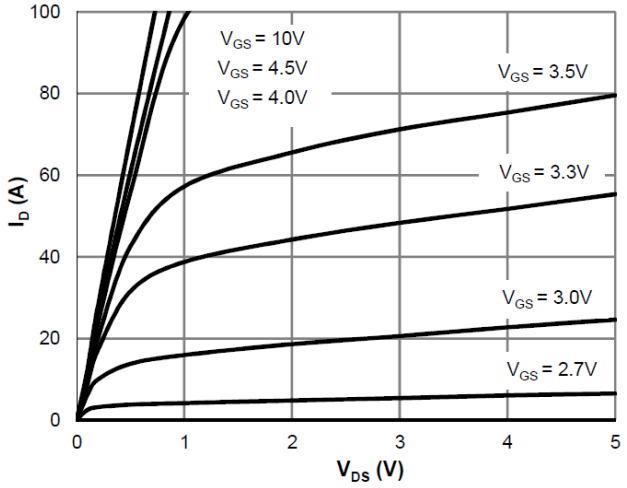


Figure 1. Saturation Characteristics

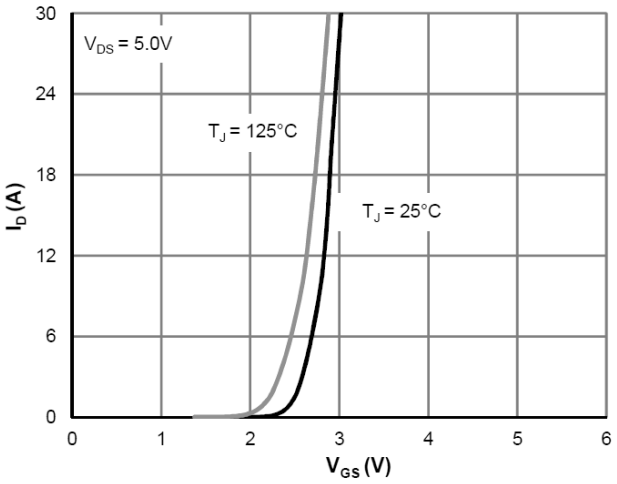


Figure 2. Transfer Characteristics

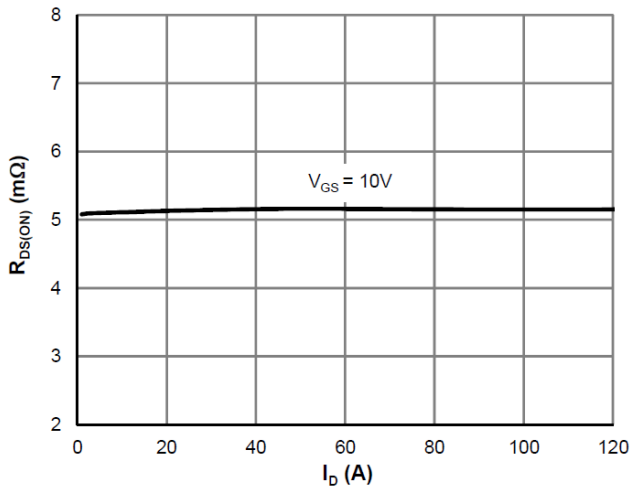


Figure 3. RDS(ON) vs. Drain Current

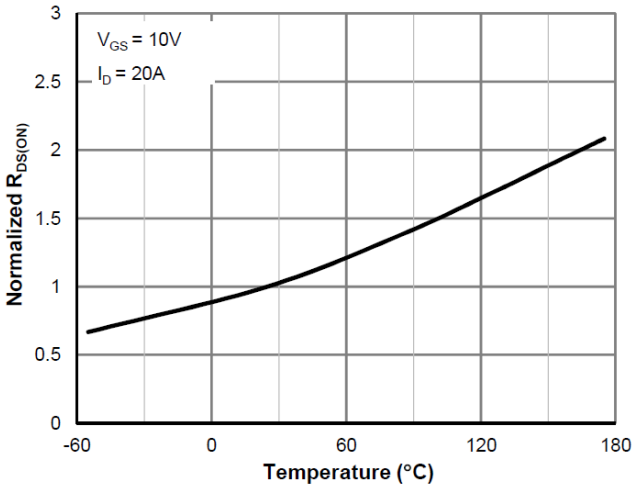


Figure4. RDS(ON) vs. Junction Temperature

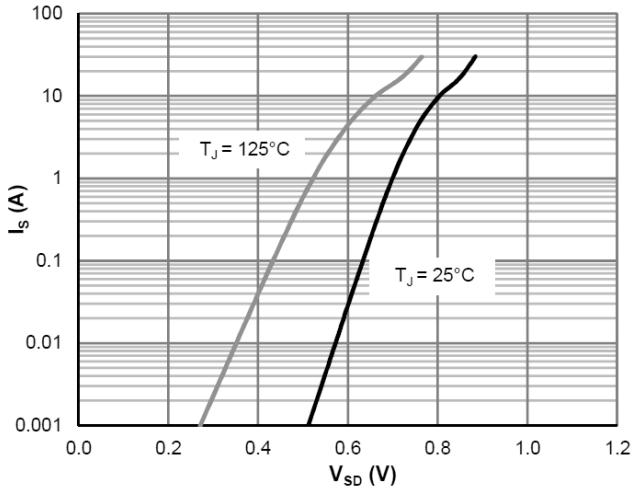


Figure 5. Body-Diode Characteristics

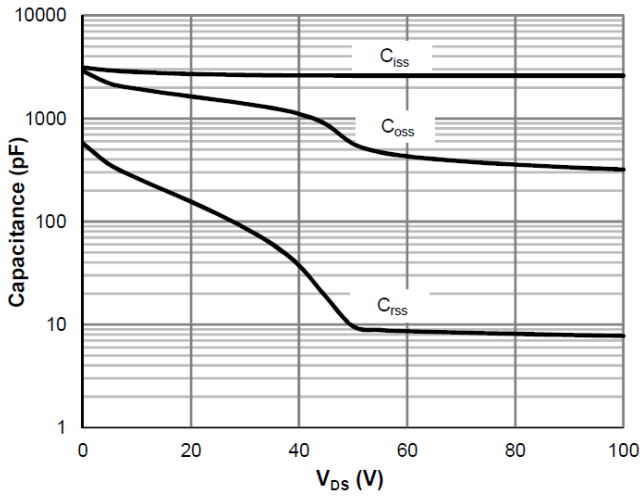


Figure 6. Capacitance Characteristics

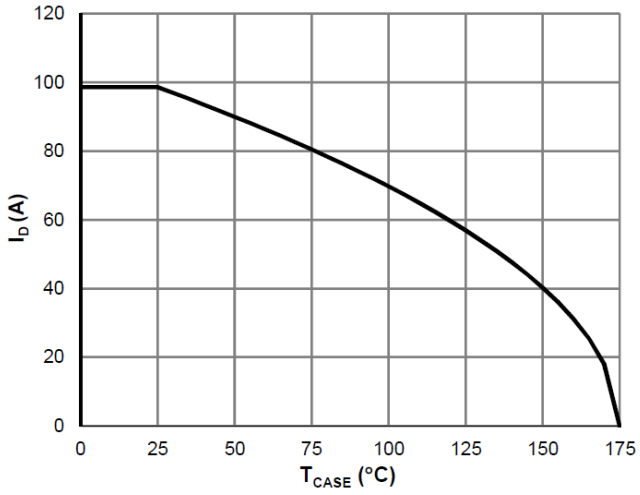


Figure 7. Current De-rating

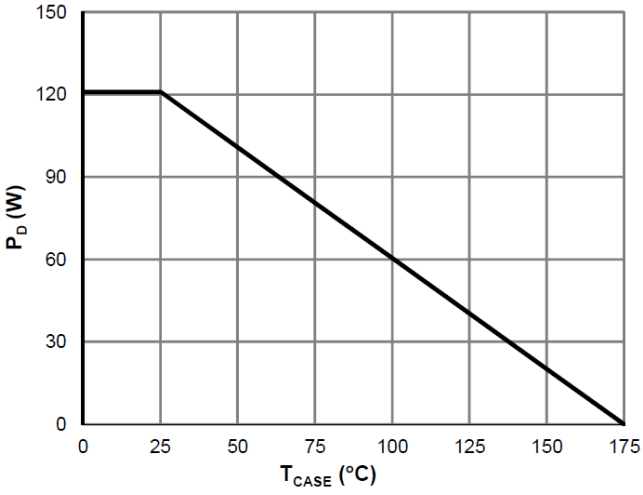


Figure8. Power De-rating

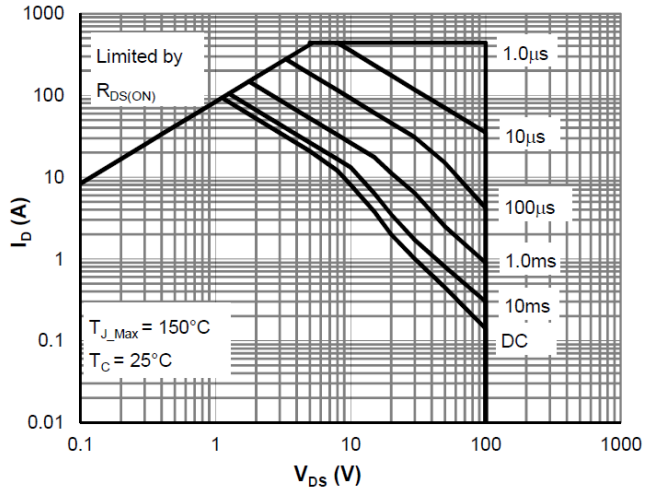


Figure 9. Maximum Safe Operating

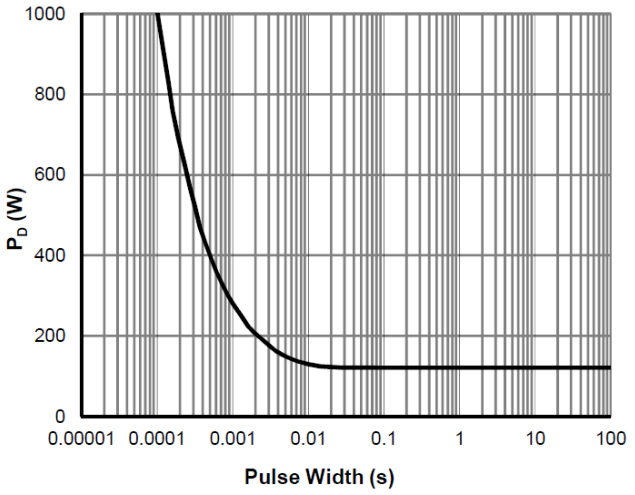


Figure 10. Single Pulse Power Rating, Junction-to-Case

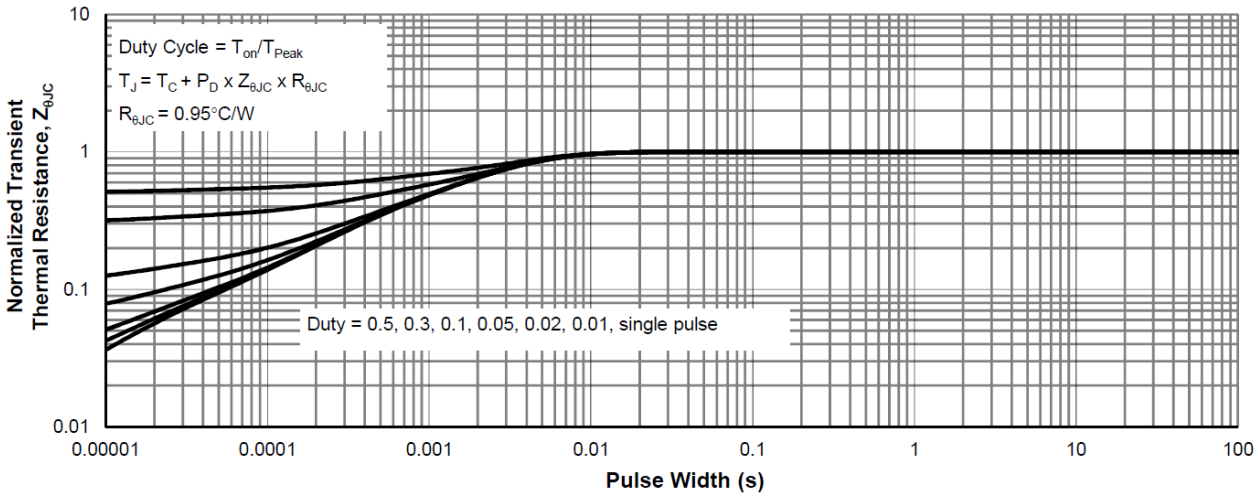
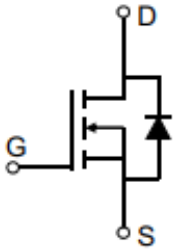
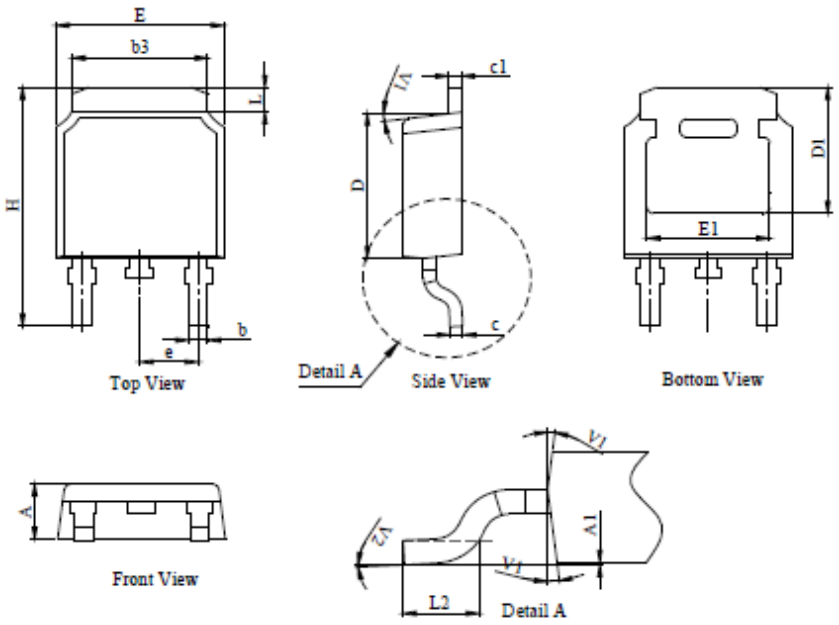


Figure 11: Normalized Maximum Transient Thermal Impedance

·Circuit diagram



·Package outlines : Dimensions in (mm)



DIM	MILLIMETERS		
	MIN	NOM.	MAX
A	2.10	2.25	2.40
A1	0.00	-	0.13
b	0.64	0.77	0.89
c	0.40	0.51	0.61
c1	0.44	0.51	0.58
D	5.90	6.10	6.30
D1	5.05	2.53	-
E	6.35	6.58	6.80
E1	4.32	-	-
b3	5.21	5.38	5.55
e	2.29		
H	9.40	10.05	10.70
L	0.89	-	1.27
L2	1.35	-	1.78
V1	7° REF		
V2	0°	-	6°

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