100V N-Channel Power MOSFET

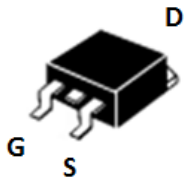
DESCRIPTION：

- Excellent $R_{DS(ON)}$
- Low Gate Charge
- 100% UIS Tested, 100% △Vds Tested
- Pb-Free Lead Plating
- RoHS compliant
- Halogen Free

V_{DS}	100V
I_D @V_{GS}=10V	193A
$R_{DS(ON)\_Typ.}$ @V_{GS}=10V	2.1mΩ

TYPICAL APPLICATIONS：

- Power Management in Telecom., Industrial Automation, CE
- Current Switching in DC/DC & AC/DC (SR) Sub-systems
- Motor Driving in Power Tool, E-vehicle, Robotics



TO-263

MAXIMUM RATINGS (at T_A = 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	193 121	A
Pulsed Drain Current (1)		I_{DM}	772	A
Single Pulsed Avalanche Energy (2)		E_{AS}	1536	mJ
Power dissipation	Tc=25℃ Tc=100℃	P_D	178 71	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	℃

Notes： 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. EAS of 1536 mJ is based on starting TJ = 25°C, L = 3.0mH, IAS = 45A, VGS = 10V, VDD = 50V; 100% test at L =0.5mH, IAS =64A.

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction to Ambient Junction to Case	$R_{\theta(jA)}$ $R_{\theta(jC)}$	59 0.7	℃/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 = 80 V, VGS = 0 V	I_{DSS}			1	uA
Gate-Source Leakage Current VGS = ±20V, VDS = 0V	I_{GSS}			±100	nA
Gate-Source threshold voltage VDS = VGS, ID = 250uA	$V_{GS(th)}$	2.0	2.9	4.0	V
Drain-Source On-State Resistance VGS = 10V, ID = 20A	$R_{DS(on)}$		2.1	2.4	mΩ
Forward Transconductance VDS = 5V, ID = 20A	G_{FS}		56.7		S
Snput capacitance f=1MHz, VDS=50 V, VGS=0 V	C_{iss}		10093		pF
Output capacitance f=1MHz, VDS=50 V, VGS=0 V	C_{oss}		1559		pF
Reverse transfer capacitance f=1MHz, VDS=50 V, VGS=0 V	C_{rss}		67		pF
Gate Resistance f=1MHz, VDS=0 V, VGS=0 V	R_g		3.2		Ω
Total Gate Charge VDS= 50V, ID= 20A,VGS= 0 to 10V	Q_G		160		nC
Gate to Source Charge VDS= 50V, ID= 20A,VGS= 0 to 10V	Q_{GS}		47		nC
Gate to Drain Charge VDS= 50V, ID= 20A,VGS= 0 to 10V	Q_{GD}		39		nC
Turn-on delay time VDS=50 V, VGS= 10V, R_L=2.5Ω, R_{GEN}=3Ω	$td_{(ON)}$		26		ns
Rise time VDS=50 V, VGS= 10V, R_L=2.5Ω, R_{GEN}=3Ω	tr		43		ns
Turn-off delay time VDS=50 V, VGS= 10V, R_L=2.5Ω, R_{GEN}=3Ω	$td_{(OFF)}$		113		ns
Fall time VDS=50 V, VGS= 10V, R_L=2.5Ω, R_{GEN}=3Ω	tf		64		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 = 1A	V_{SD}		0.7	1.0	V
Continuous Current, Tc=25℃	I_S			178	A
Revers Recovery Time IF=15A, dIF/dt = 100A/us□	Trr		11		ns
Revers Recovery Charge IF=15A, dIF/dt = 100A/us□	Qrr		2.5		nC

Typical Performance Characteristics

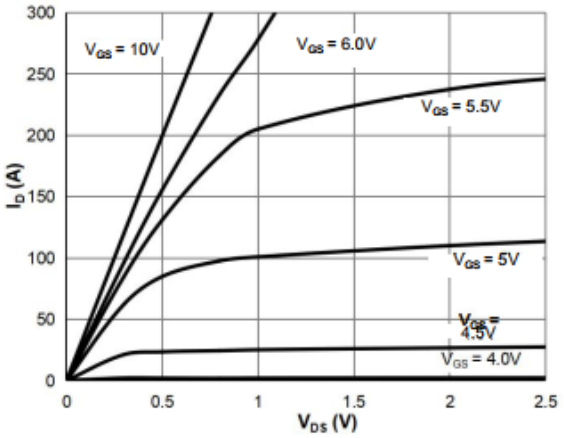


Figure 1. Typical Saturation Characteristics

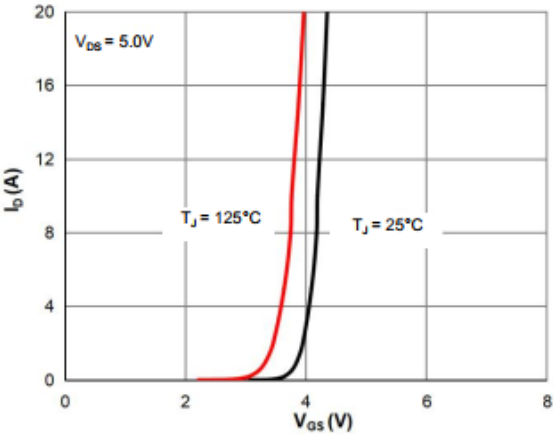


Figure 2. Typical Transfer Characteristics

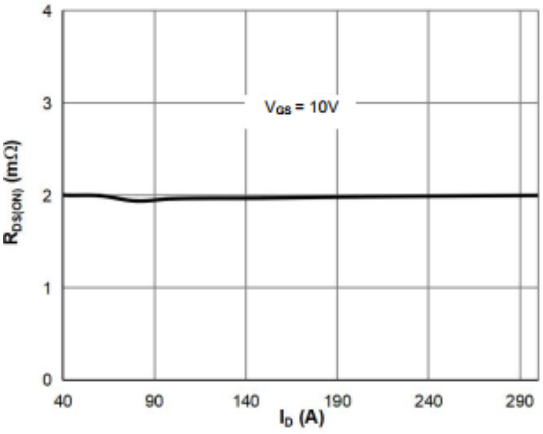


Figure 3. Typical $R_{DS(ON)}$ vs. Drain Current

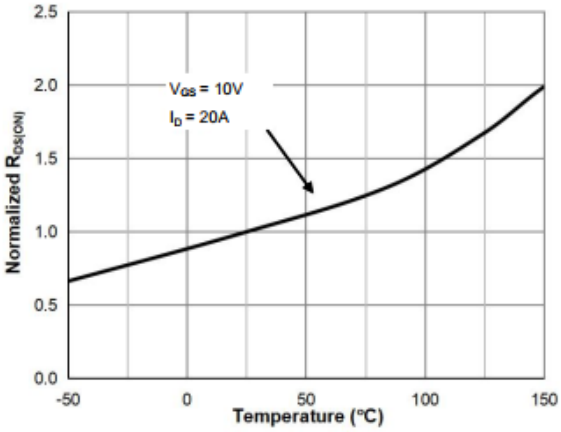


Figure 4. Typical $R_{DS(ON)}$ vs. Junction Temperature

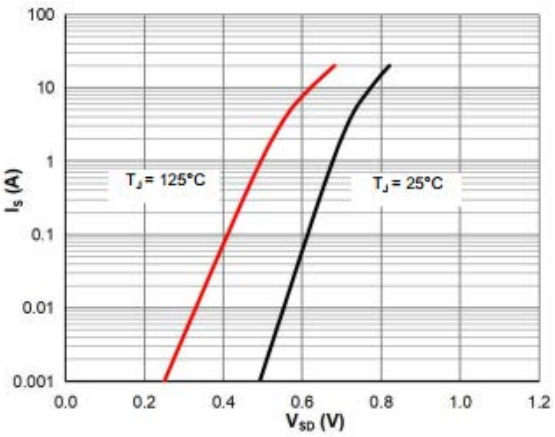


Figure 5. Typical Body-Diode Characteristics

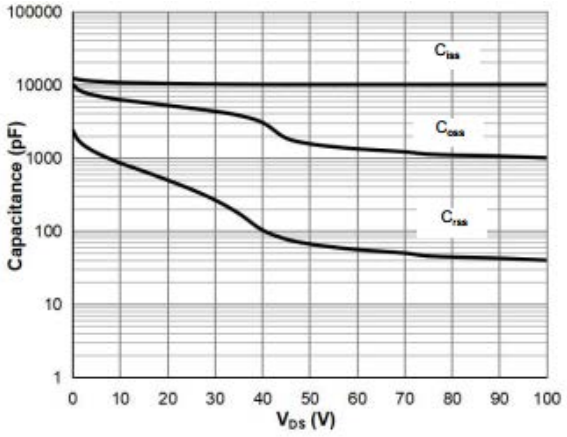


Figure 6. Typical Capacitance Characteristics

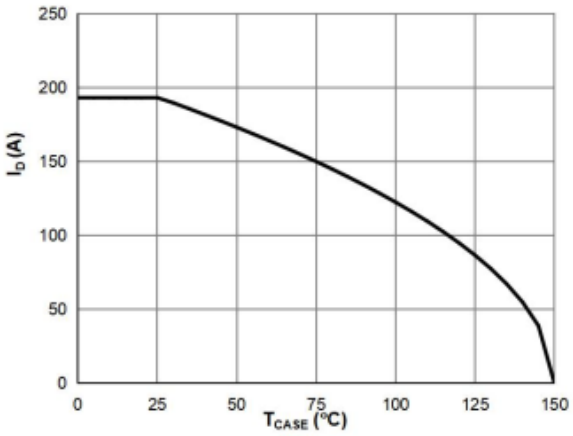


Figure 7. Typical Current De-rating

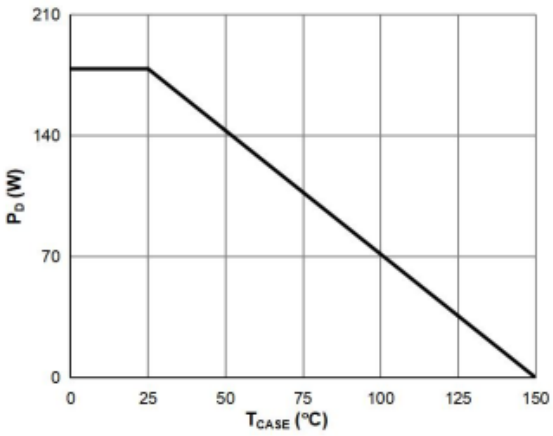


Figure 8. Typical Power De-rating

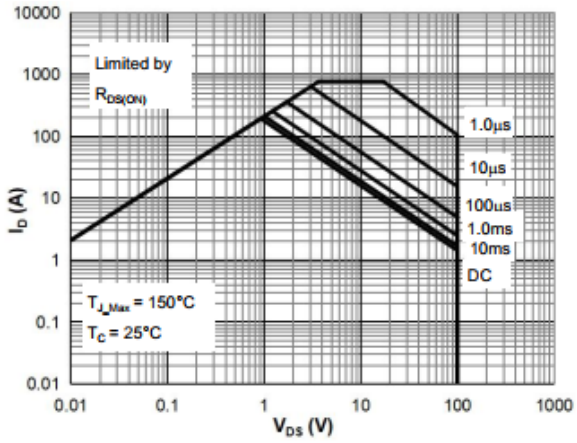


Figure 9. Typical Maximum Safe Operating

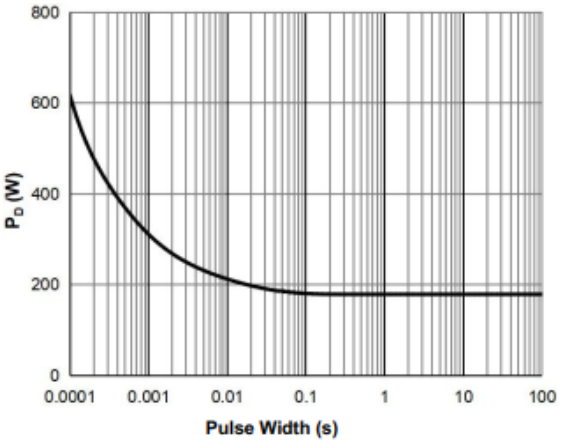


Figure 10. Single Pulse Power Rating, Junction-to-Case

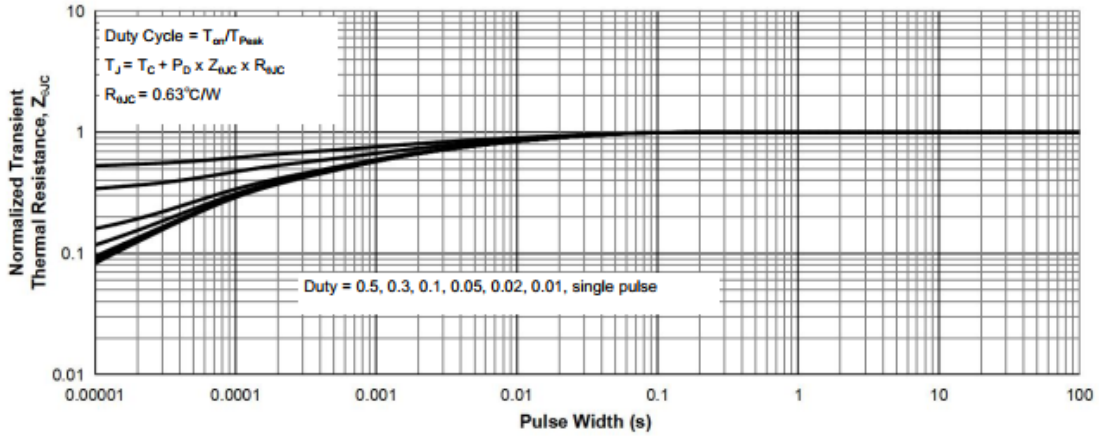
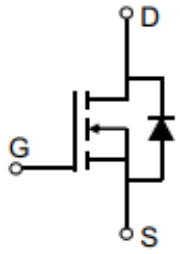
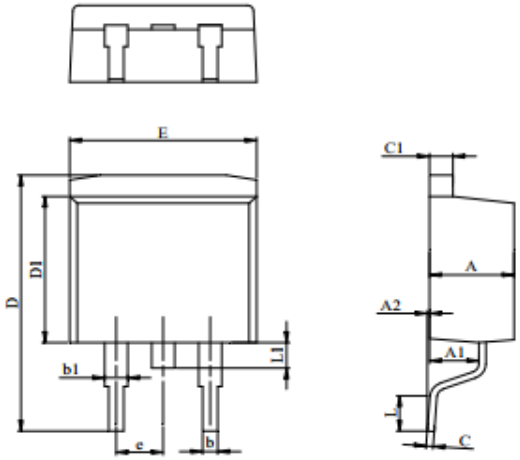


Figure 11. Typical Normalized Maximum Transient Thermal Impedance

- Circuit diagram



- Package outlines : Dimensions in (mm)



DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	4.24		4.77
A1	2.30		2.89
A2	0.00	0.10	0.25
b	0.70		0.96
b1	1.17		1.70
C	0.30		0.60
C1	1.15		1.42
D	14.10		15.88
D1	8.50		9.60
E	9.78		10.36
L	1.78		2.79
L1			1.75
e		2.54	

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