60V N-channel Enhancement Mode Power MOSFET

DESCRIPTION：

·Low on resistance

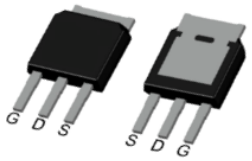
·Low reverse transfer capacitances

·100% single pulse avalanche energy test

·100% ΔVds Test

·Pb-Free plating / Halogen-Free / RoHS compliant

V_{DS}	100V
I_D	60A
$R_{DS(ON)_Typ.}$ @V_{GS}=10V	12mΩ



TO-251

TYPICAL APPLICATIONS：

·Motor Control and Drive

·Charge/Discharge for Battery Management System

·Synchronous Rectifier for SMPS

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	60 38	A
Pulsed Drain Current(1)	T_C = 25°C, tp limited by T_{jmax}	$I_{D\ pulse}$	240	A
Avalanche energy, single pulse	L=0.5mH, Rg =25Ω	E_{AS}	132	mJ
Power dissipation	Tc=25℃	P_{TOT}	74	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	℃

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction to Ambient Junction to Case	$R_{\theta JA}$ $R_{\theta JC}$	98 1.70	℃/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
Gate-Source threshold voltage VDS = VGS, ID = 250uA	$V_{GS(th)}$	1.3		2.3	V
Zero Gate Voltage Drain Current VDS = 100 V, VGS = 0 V, T_j=25°C VDS = 100 V, VGS = 0 V, T_j=125°C	I_{DSS}			1 100	uA
Gate-Source Leakage Current VGS = 20V, VDS = 0 V	I_{GSS}			100	nA
Drain-Source On-State Resistance VGS = 10V, ID = 20A VGS = 4.5V, ID = 20A	$R_{DS(on)}$		12 18	14.5 22	mΩ
Input capacitance f=1MHz, VDS=50V, VGS=0 V	C_{iss}		2320		pF
Output capacitance f=1MHz, VDS=50V, VGS=0 V	C_{oss}		176		pF
Reverse transfer capacitance f=1MHz, VDS=50V, VGS=0 V	C_{rss}		14		pF
Total Gate Charge VDS= 50V, ID= 20A, VGS= 10V	Q_G		37		nC
Gate to Source Charge VDS= 50V, ID= 20A, VGS= 10V	Q_{GS}		9		nC
Gate to Drain Charge VDS= 50V, ID= 20A, VGS= 10V	Q_{GD}		7		nC
Turn-on delay time VDD= 20V, ID= 50A,VGS= 10V, R_G =3Ω	td (ON)		7		ns
Rise time VDD= 35V, ID= 50A,VGS= 10V, R_G =3Ω	tr		18		ns
Turn-off delay time VDD= 35V, ID= 50A,VGS= 10V, R_G =3Ω	td (OFF)		19		ns
Fall time VDD= 35V, ID= 50A,VGS= 10V, R_G =3Ω	tf		5		ns
Gate resistance VGS=0V, VDS=0V,f=1MHz	RG		1.9		Ω
Body Diode Forward Voltage VGS = 0V, IS = 20A	V_{SD}			1.2	V
Continuous Body Diode Current	I_S			60	A
Revers Recovery Time IF=20A, di/dt = 100A/us	Trr		42		ns
Revers Recovery Charge IF=20A, di/dt = 100A/us	Qrr		53		uC

Typical Performance Characteristics

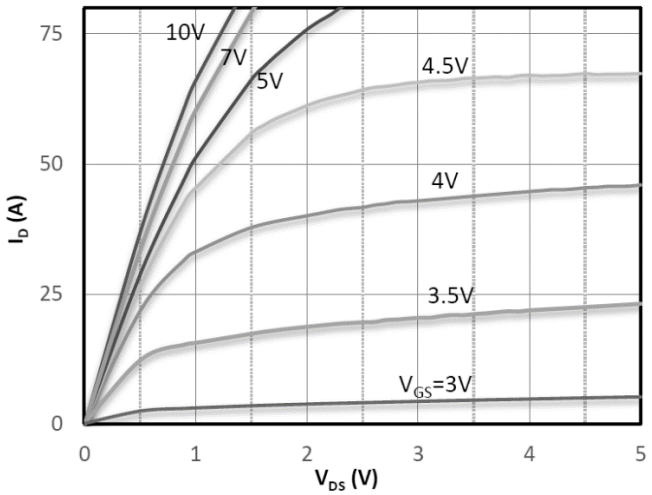


Figure 1. Output Characteristics

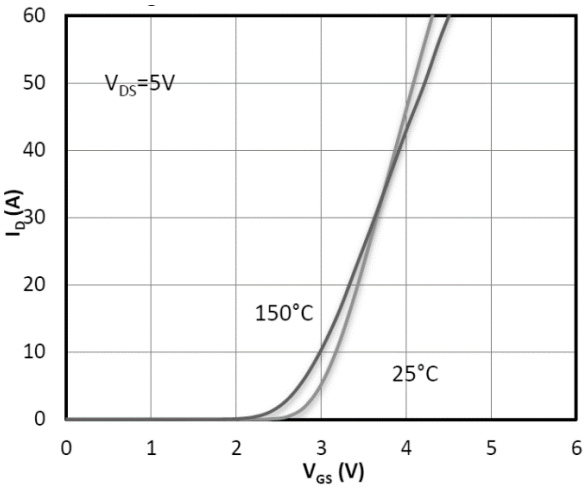


Figure 2. Transfer Characteristics

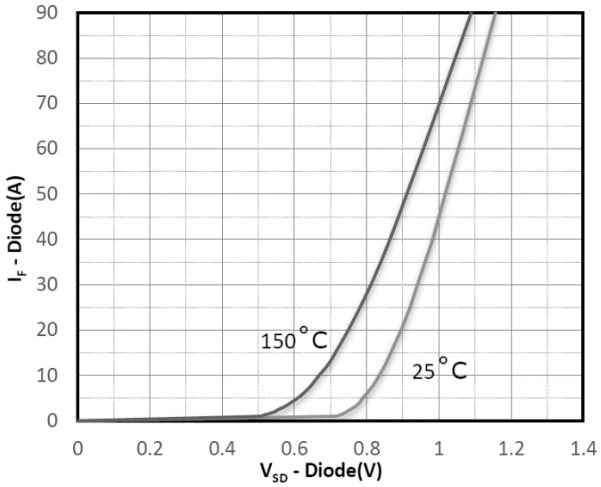


Figure 3. Body-diode Forward Characteristics

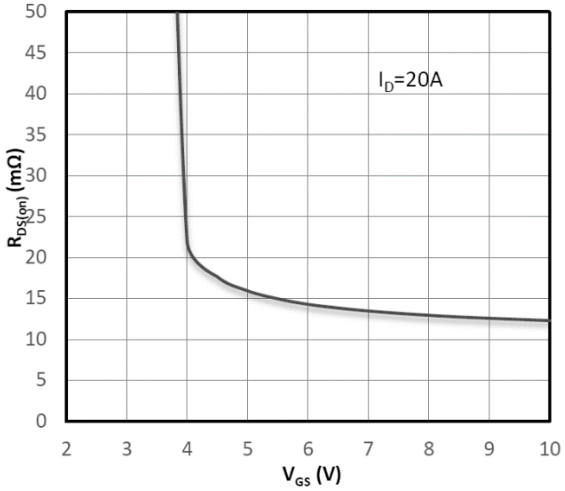


Figure 4. Rds(on) vs Gate Voltage

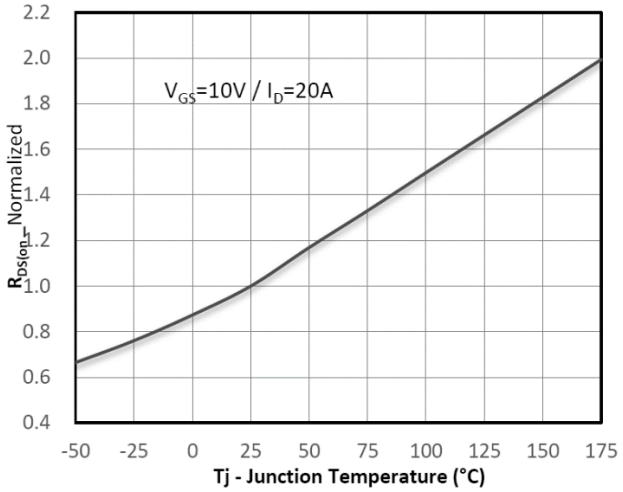


Figure 5. Rds(on) vs. Temperature

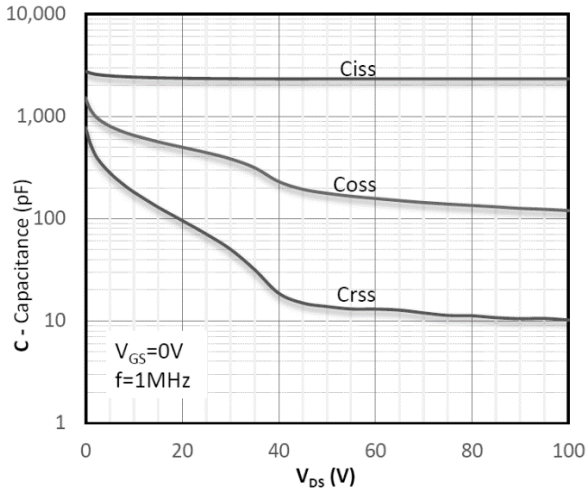


Figure 6.Capacitance Characteristics

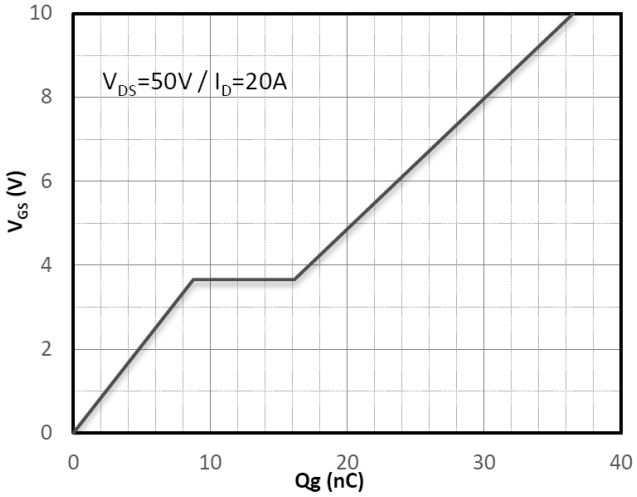


Figure 7. Gate Charge Characteristics

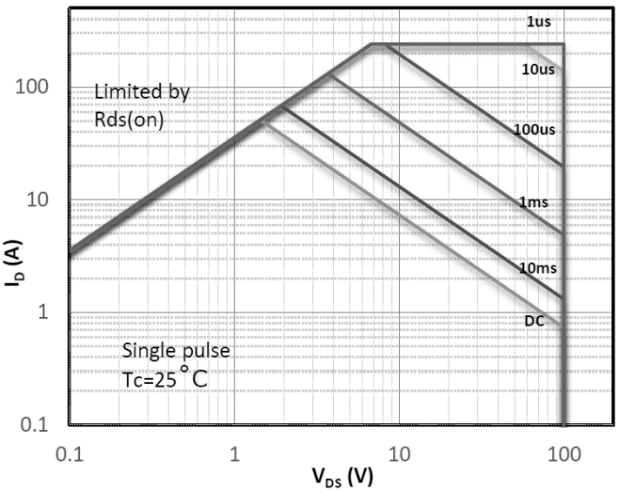


Figure 8. Safe Operating Area

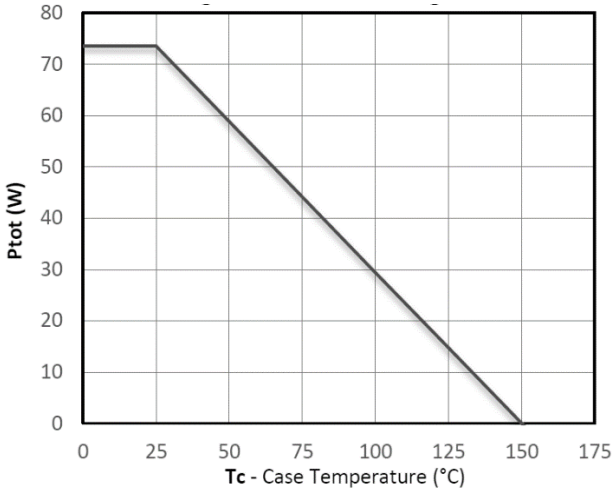


Figure 9. Power De-rating

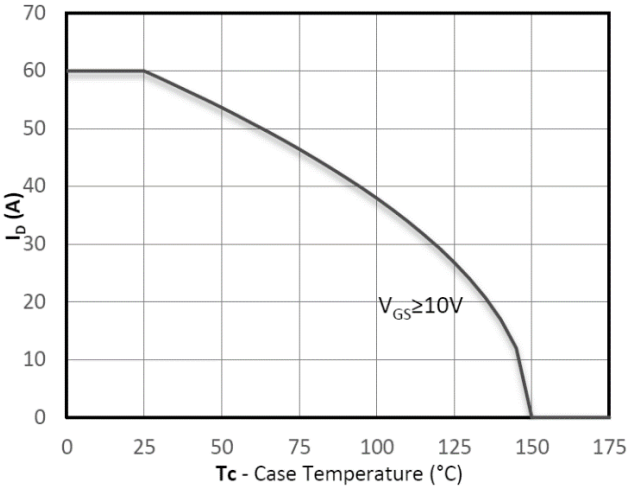


Figure 10.Current De-rating

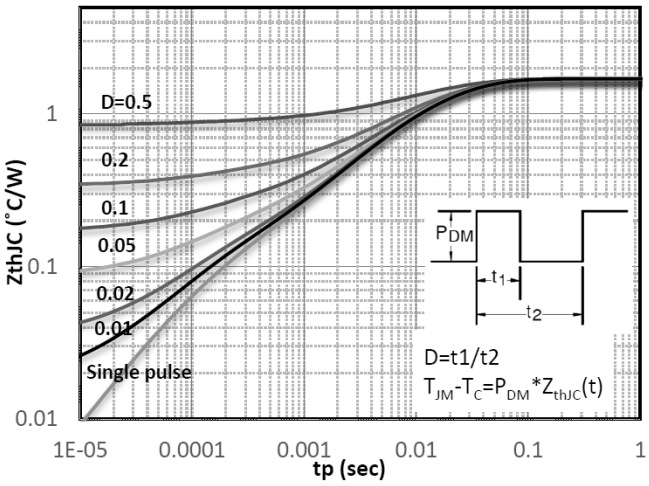
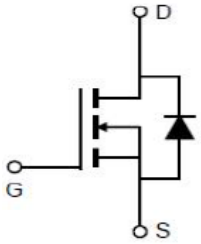
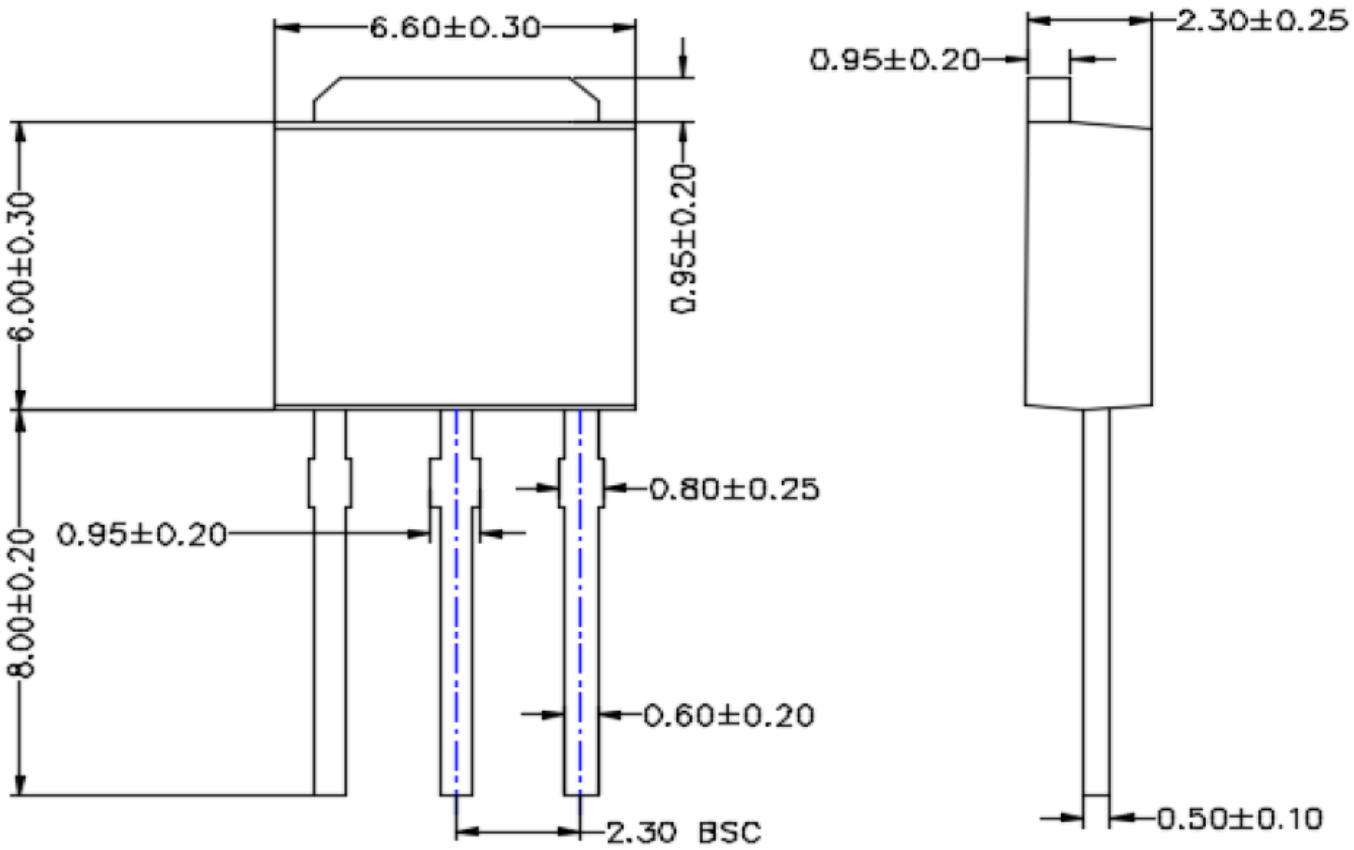


Figure 11. Max. Transient Thermal Impedance

·Circuit diagram



·Package outlines : Dimensions in (mm)



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