100V N-channel Enhancement Mode Power MOSFET

DESCRIPTION：

·Low on resistance

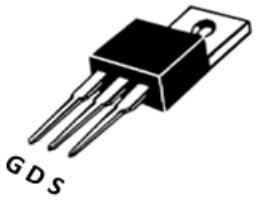
·Low reverse transfer capacitances

·100% single pulse avalanche energy test

·100% ΔVds Test

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

V_{DSS}	100V
I_D （Silicon limit）	283A
$R_{DS(ON)_Typ.}$ @V_{GS}=10V	1.7mΩ



TO-220

TYPICAL APPLICATIONS：

·Power switching applications

·Power management for inverter systems

·Battery management

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℃（Silicon limit） Tc=25℃（Package limit） Tc=100℃	I_D	283 180 179	A
Pulsed Drain Current	Tc=25℃, tp limited by T_{j_max}	$I_{D\ pulse}$	720	A
Single Pulsed Avalanche Energy (1)	L=0.5mH, Rg =25Ω	E_{AS}	2209	mJ
Power dissipation	T_a=25℃ Tc=25℃	P_{TOT}	313 2.0	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	℃

Notes： 1. EAS was tested at Id=66A, L=0.5mH, Starting TJ=25℃.

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction to Ambient Junction to Case	$R_{\theta JA}$ $R_{\theta JC}$	62 0.4	℃/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, 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
Gate-Source threshold voltage VDS = VGS, ID = 250uA	$V_{GS(th)}$	2	3	4	V
Drain-Source On-State Resistance VGS = 10V, ID = 90A	$R_{DS(on)}$		1.7	2.0	mΩ
Transconductance VDS = 5V, ID = 150A	gfs		334		S
Input capacitance f=1MHz, VDS=50V, VGS=0 V	C_{iss}		12640		pF
Output capacitance f=1MHz, VDS=50V, VGS=0 V	C_{oss}		2730		pF
Reverse transfer capacitance f=1MHz, VDS=530V, VGS=0 V	C_{rss}		120		pF
Total Gate Charge VDD= 50V, ID= 90A, VGS= 10V	Q_G		212		nC
Gate to Source Charge VDD= 50V, ID= 90A, VGS= 10V	Q_{GS}		59		nC
Gate to Drain Charge VDD= 50V, ID= 90A, VGS= 10V	Q_{GD}		59		nC
Gate plateau voltage VDD= 50V, ID= 90A, VGS= 10V	$V_{plateau}$		4.8		V
Turn-on delay time VDD= 50V, ID= 90A,VGS= 10V, R_G =3Ω	td (ON)		43		ns
Rise time VDD= 50V, ID= 90A,VGS= 10V, R_G =3Ω	tr		105		ns
Turn-off delay time VDD= 50V, ID= 90A,VGS= 10V, R_G =3Ω	td (OFF)		117		ns
Fall time VDD= 50V, ID= 90A,VGS= 10V, R_G =3Ω	tf		159		ns
Continuous Body Diode Current	I_S			180	A
Body Diode Forward Voltage VGS = 0V, IS = 90A	V_{SD}			1.2	V
Revers Recovery Time IF=50A, di/dt = 100A/us	Trr		116		ns
Revers Recovery Charge IF=50A, di/dt = 100A/us	Qrr		304		uC

Typical Performance Characteristics

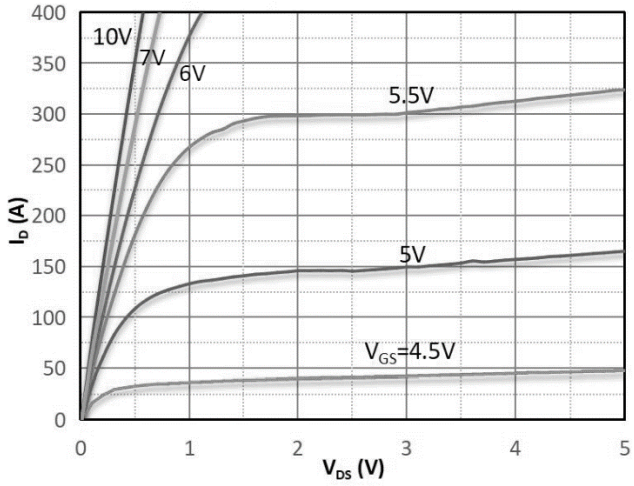


Figure 1. Output Characteristics

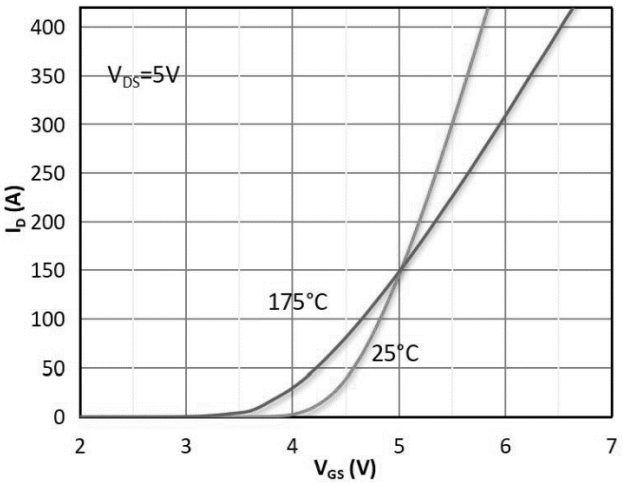


Figure 2. Transfer Characteristics

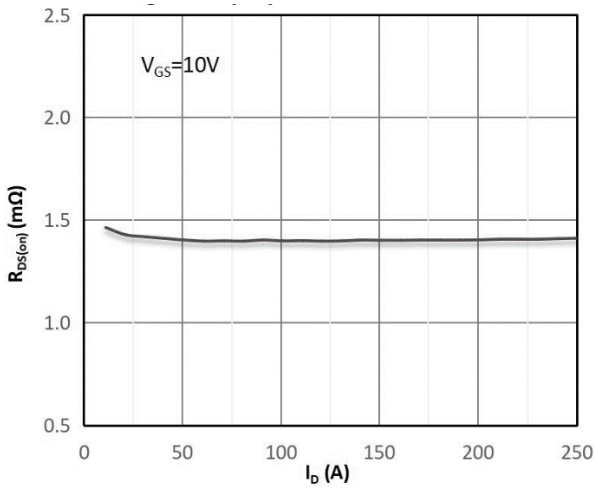


Figure 3. Rds(on) vs Drain Current

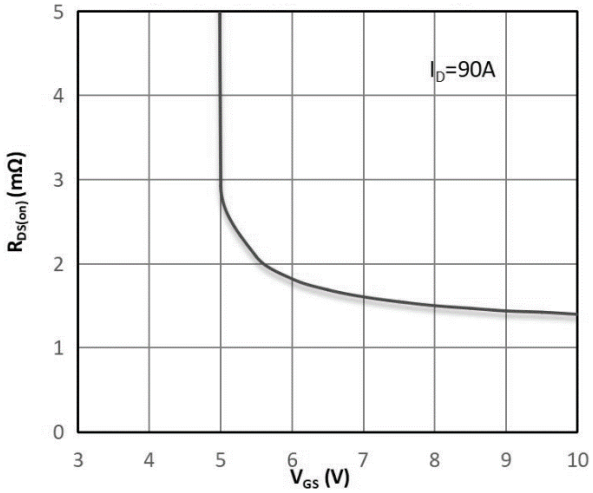


Figure 4. Rds(on) vs Gate Voltage

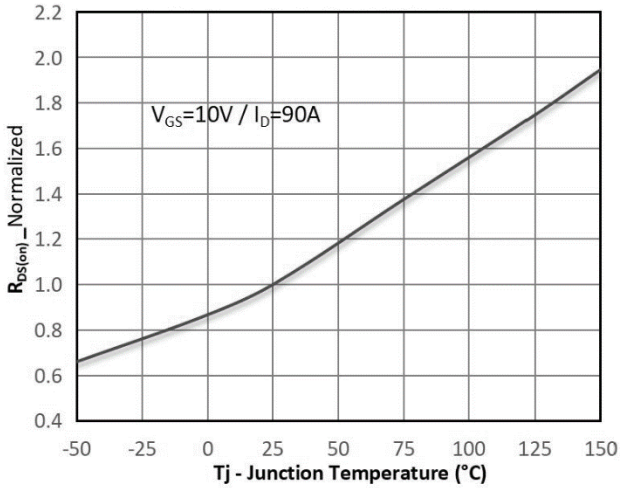


Figure 5. Rds(on) vs. Temperature

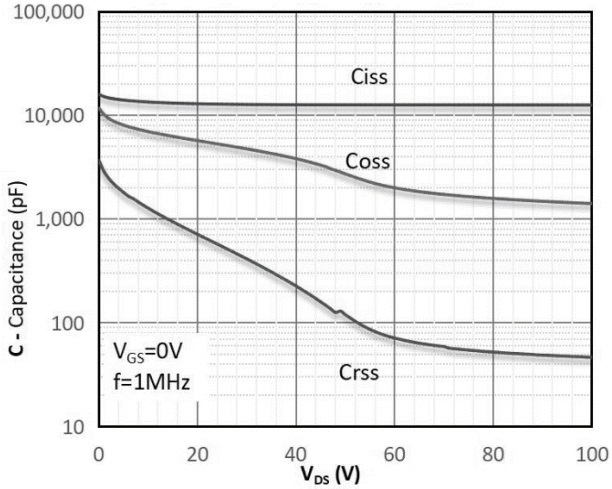


Figure 6. Capacitance Characteristics

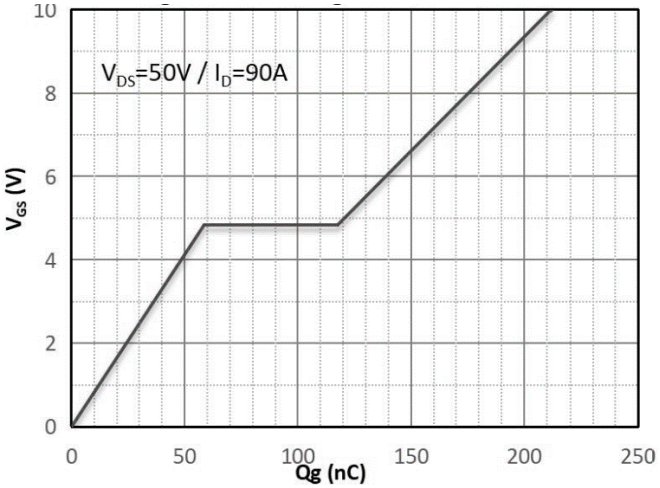


Figure 7. Gate Charge Characteristics

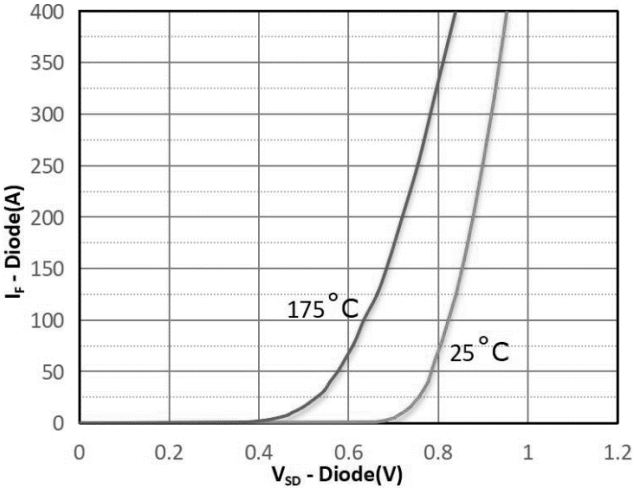


Figure 8. Body-diode Forward Characteristics

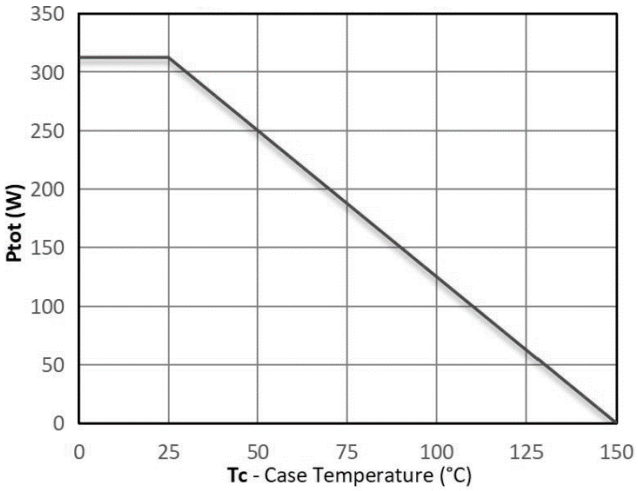


Figure 9. Power De-rating

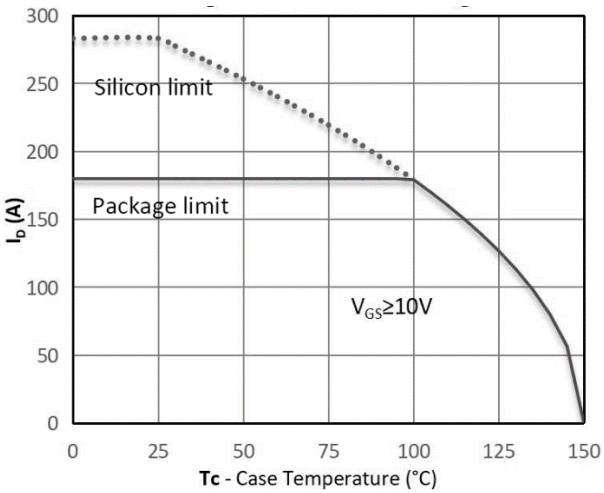


Figure 10. Current De-rating

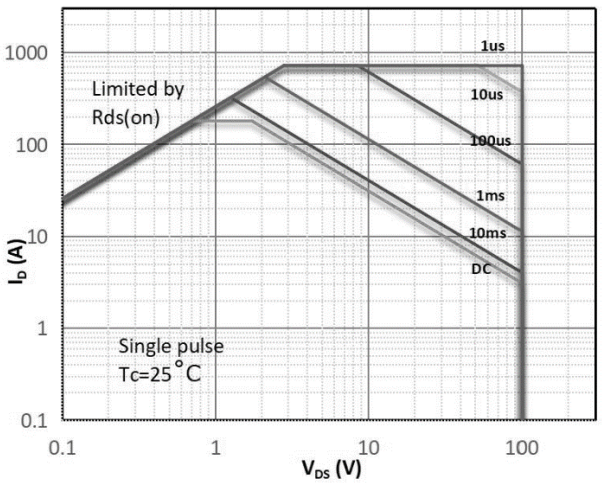


Figure 11. Safe Operating Area

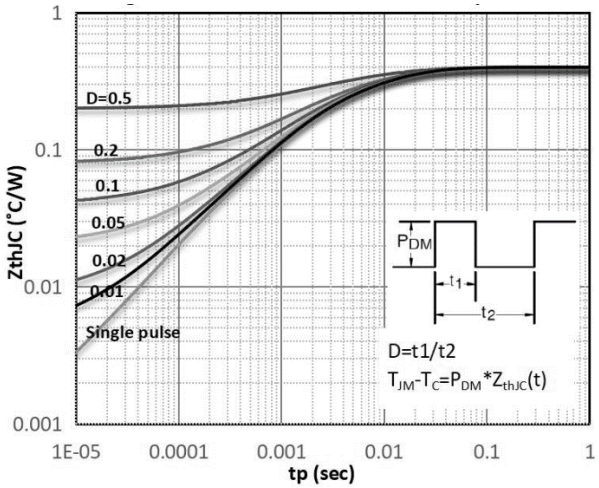
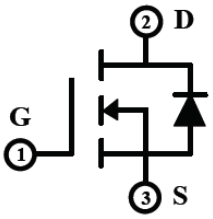
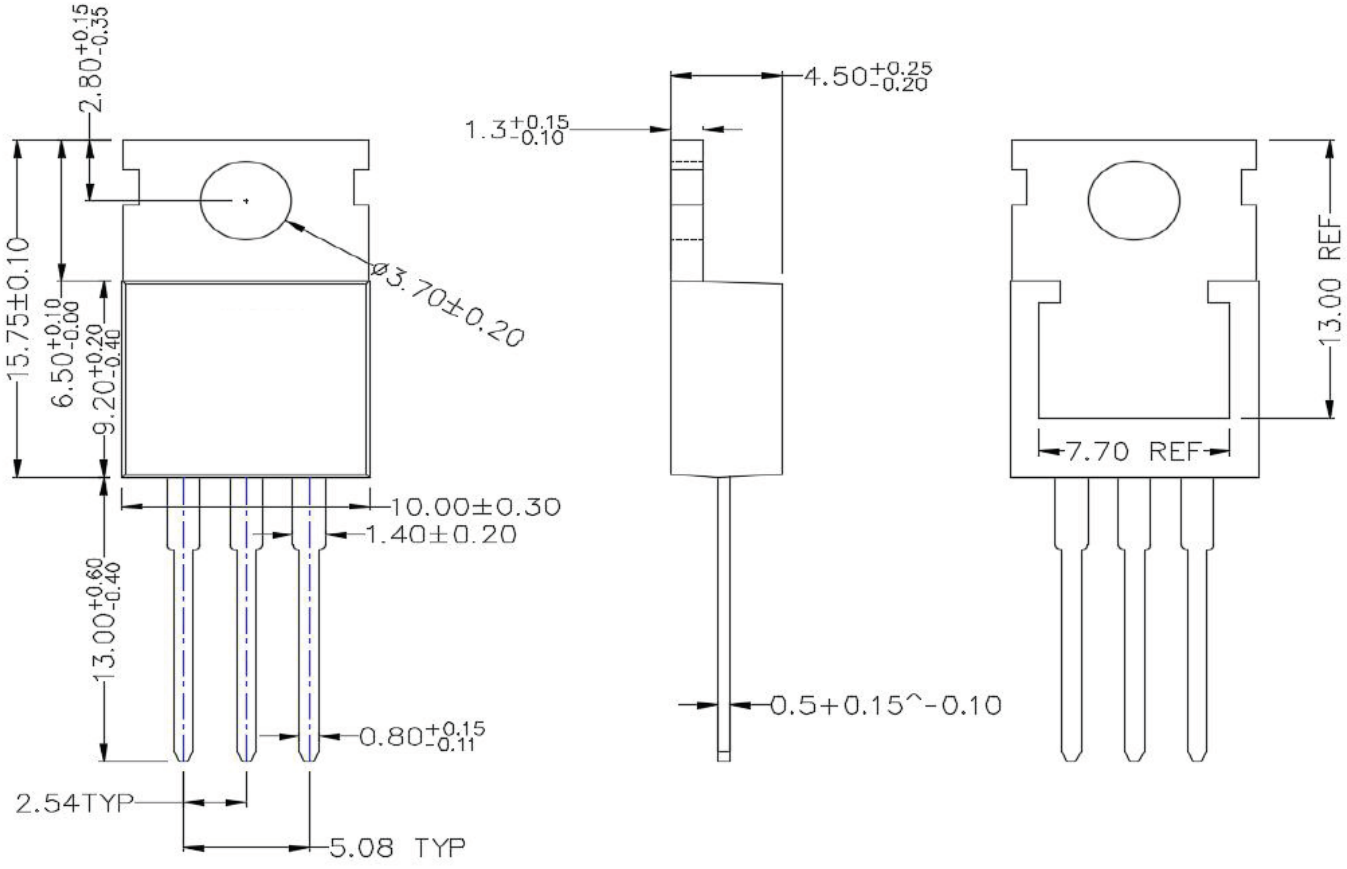


Figure 12. Max. Transient Thermal Impedance

·Circuit diagram



·Package outlines : Dimensions in (mm)



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