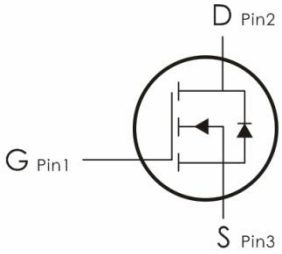
Description：

This N-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.



Features：

1) V_{DS}=100V,I_D=15A,$R_{DS(ON)}$<90mΩ @V_{GS}=10V
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity trench technology for ultra low $R_{DS(ON)}$.
5) Excellent package for good heat dissipation.

Absolute Maximum Ratings：（T_C=25℃ unless otherwise noted）

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Curren-T_C=25℃ [3]	15	A
	Continuous Drain Current-T_C=100℃	12	
P_D	Power Dissipation-TC=25°C	59	W
E_{AS}	Single pulse avalanche energy [5]	6.1	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55-+150	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	2.1	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	62	℃/W

Package Marking and Ordering Information：

Part NO.	Marking	Package
15N10	15N10	TO-220

Electrical Characteristics： (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250 μ A	100	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=80V	---	---	1	μ A
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250 μ A	1.5	---	2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance[1]	V_{GS}=10V,I_D=10A	---	67	90	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance[2]	V_{DS}=15V, V_{GS}=0V, f=1MHz	---	1535	---	pF
C_{oss}	Output Capacitance[2]		---	60	--	
C_{rss}	Reverse Transfer Capacitance[2]		---	37	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=50V,ID=10A R_G=3.3Ω	---	4.2	---	ns
t_r	Rise Time		---	8.2	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	35.6	---	ns
t_f	Fall Time		---	9.6	---	ns
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=80V, I_D=10A	---	26.2	---	nC
Q_{gs}	Gate-Source Charge		---	4.6	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	5.1	---	nC
Drain-Source Diode Characteristics						
I_S	VG=VD=0V[3]		---	---	15	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_D=1A	---	---	1.2	V
Trr	Reverse Recovery Time	I_F=10A,V_{GS}=0V	---	37	---	NS

Qrr	Reverse Recovery Charge	dI/dt=100A/us	---	27.3	---	NC

Notes:

1: Pulse test; pulse width ≦ 300us, duty cycle ≦ 2%.

2: Guaranteed by design, not subject to production testing.

3: Package limitation current is 10A.

4: Repetitive rating, pulse width limited by max junction temperature.

5: Starting TJ = 25°C,L = 0.1mH,IAS = 11A.

Typical Characteristics: (T_C=25℃ unless otherwise noted)

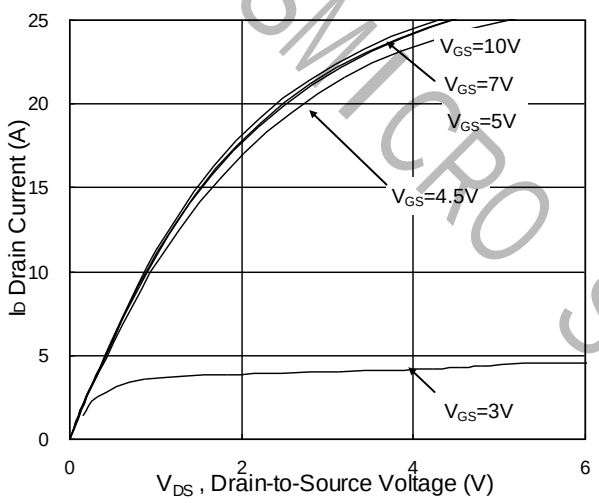


Fig.1 Typical Output Characteristics

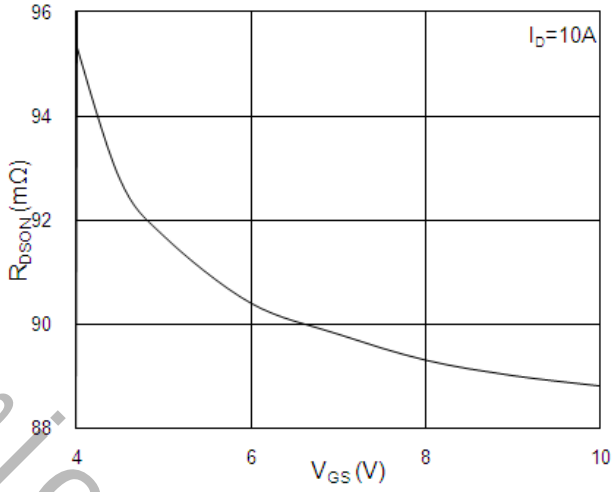


Fig.2 On-Resistance vs G-S Voltage

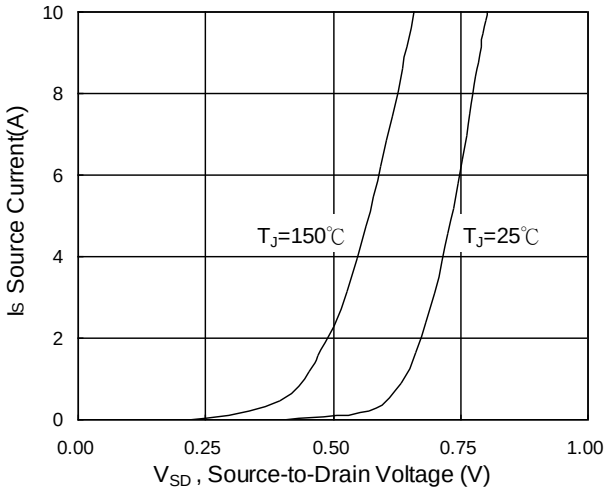


Fig.3 Source Drain Forward Characteristics

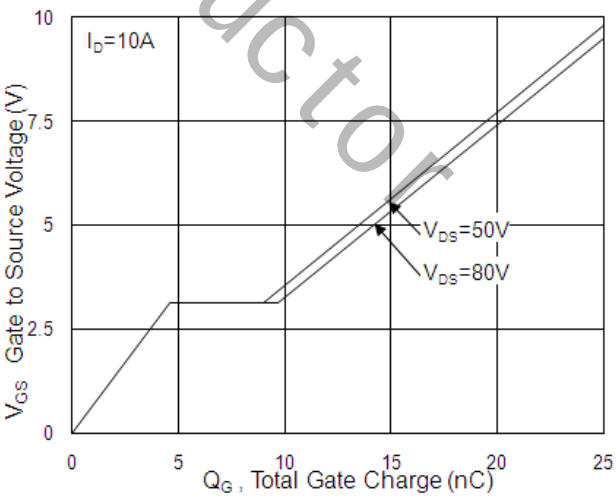


Fig.4 Gate-Charge Characteristics

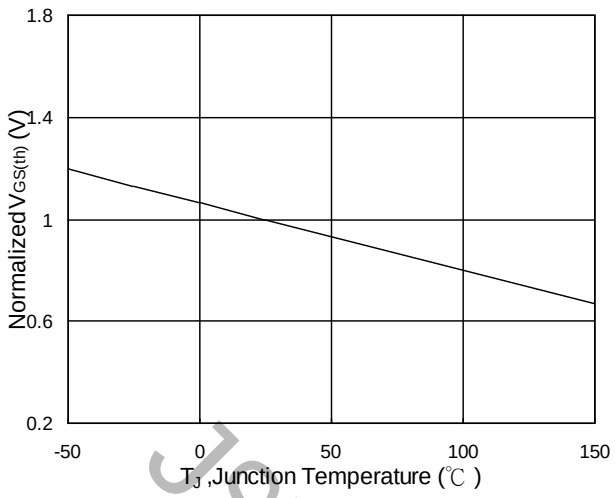


Fig.5 Normalized $V_{GS(th)}$ vs T_J

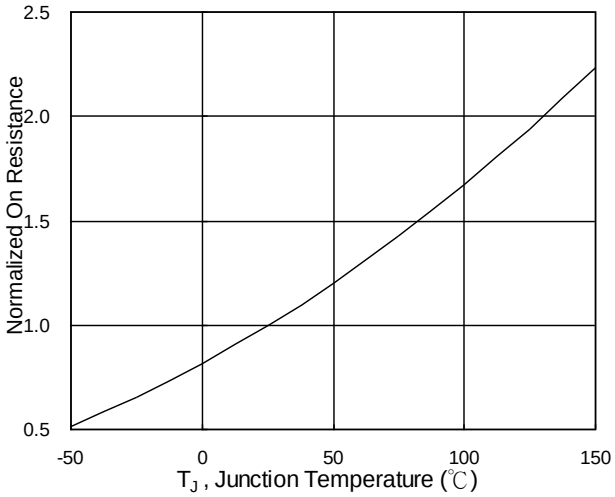


Fig.6 Normalized R_{DSON} vs T_J

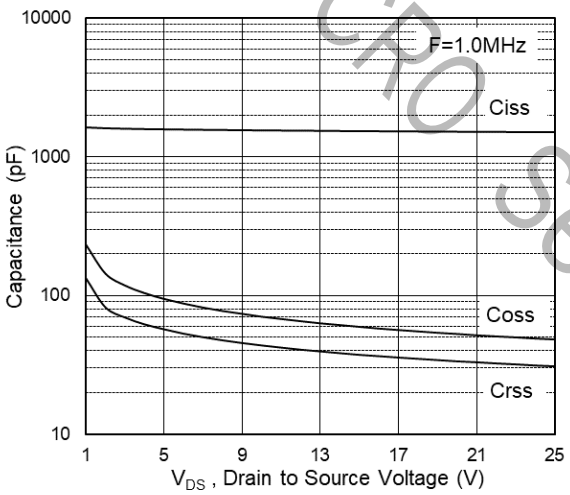


Fig.7 Capacitance

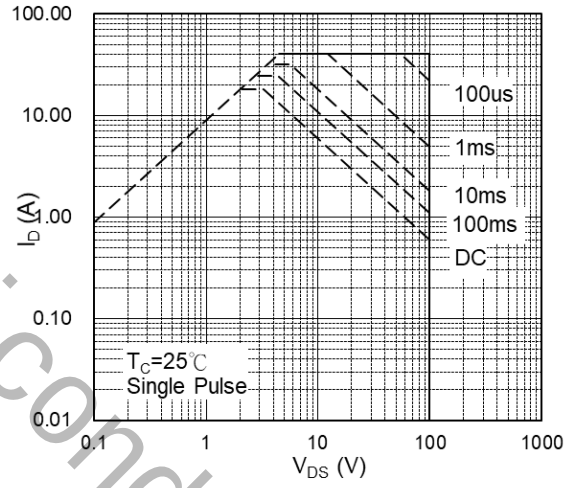


Fig.8 Safe Operating Area

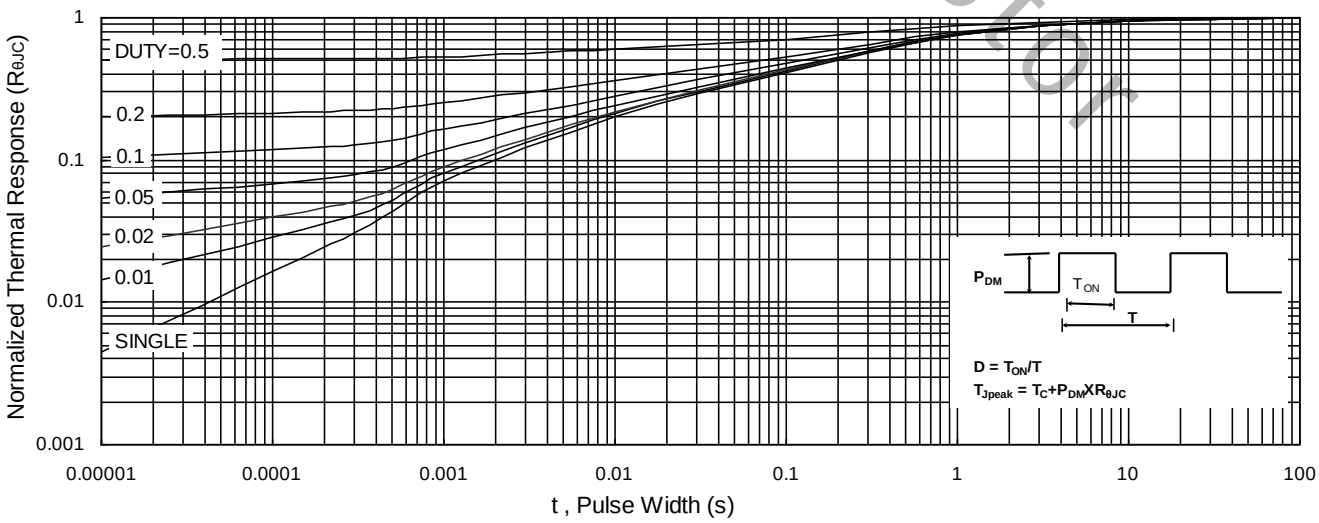


Fig.9 Normalized Maximum Transient Thermal Impedance

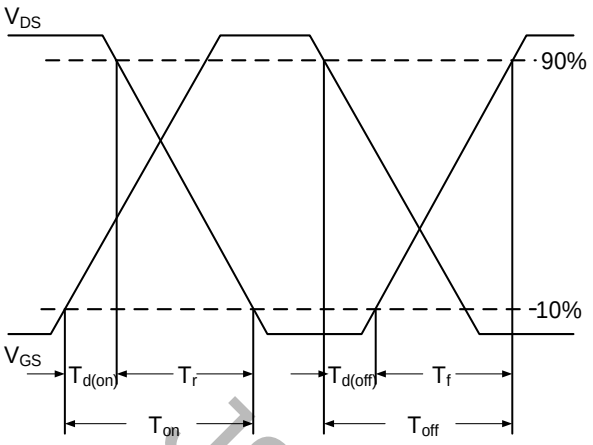


Fig.10 Switching Time Waveform

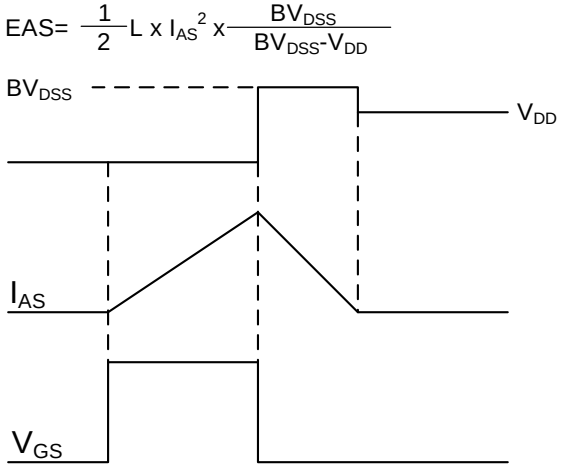


Fig.11 Unclamped Inductive Switching Waveform