N-Channel Enhancement Mode Field Effect Transistor

General Description

Greenchip adopts advanced trench gate super junction technology and design to provide excellent RDS(ON) with low gate charge. This super junction MOSFET fits the industry's AC-DC SMPS requirements for UPS, AC-DC power conversion,ATX power supplies, and industrial power applications.

Features

- Large current and voltage handling capability
- Strong surge current prevention
- New technology for high voltage device
- Low on-resistance and low conduction losses
- Small package
- Ultra Low Gate Charge cause lower driving requirements
- ROHS compliant

Typical information

$V_{(BR)DSS}$	$R_{DS(ON)typ}$	I_D
650V	230mΩ	16A

Applications

- LED driver
- Switched mode power supplies(SMPS)
- Uninterruptible Power Supply（UPS）
- ATX power supplies
- Industrial power applicatio

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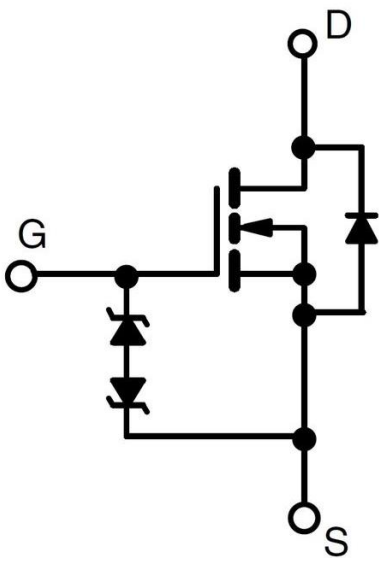

Schematic diagram

ABSOLUTE MAXIMUN RATINGS

PARAMETERS/TEST CONDITIONS	SYMBOL	LIMITS	UNITS
Drain-Source Voltage	V_{DS}	650	V
Drain Current –continuous @25°C	I_D	16	A
Drain Current –continuous @100°C	I_D	9.6	A
Pulsed Drain Current[1]	I_{DM}	64	A
Gate-Source Voltage	V_{GS}	±30	V
Single Pulse Avalanche[2]	E_{AS}	653	mJ
Operating Junction & Storage Temperature	T_j, T_{stg}	-55 to 150	°C
Lead Temperature (1/16” from case for 10sec.)	T_L	300	°C

Note:

1. Pulse width limited by maximum junction temperature.
2. VDD = 90V, VDS = 600V, L=30mH

ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	650			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2	3	4	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±30V			±10	μA
Zero Gate Voltage Drain Current	I_{DSS}	VDS = 650V, VGS = 0V			10	μA
		VDS = 650V, VGS = 0V, TJ =150oC			100	
On-State Drain Current	$R_{DS(ON)}$	V_{GS} = 10V, I_D = 8A		230	260	mΩ
Body Diode Forward Voltage	V_{SD}	T_J = 25°C, V_{GS} = 0V, I_{SD} = 16A		1.08	1.4	V
DYNAMIC PARAMETERS						
Input Capacitance	Ciss	V_{GS} = 0V, V_{DS} = 25V, f = 100 KHz		1103		pF
Output Capacitance	Coss			712.7		
Reverse Transfer Capacitance	Crss			36.9		
Total Gate Charge	Q_g	V_{DD} = 100V, I_D =16A, V_{GS} = 10V		37.5		nC
Gate-Source Charge	Q_{gs}			11.6		
Gate-Drain Charge	Q_{gd}			10.1		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	$t_{(on)}$	VGS = 10V, VDS = 100V, ID = 16A, RG = 25Ω,		11.3		ns
Rise Time	t_r			22.9		
Turn-Off Delay Time	$t_{(off)}$			114.7		
Fall Time	t_f			72.3		
Continuous Current	I_S				16	A
Forward Voltage	V_{SD}	I_F =Is, V_{GS} = 0V		1.08		V
Body Diode Reverse Recovery Time	Trr	I_F =16A, di/dt =100A/us		122.7		nS
Body Diode Reverse Recovery Charge	Qrr			551.7		uC

ELECTRICAL CHARACTERISTICS DIAGRAMS

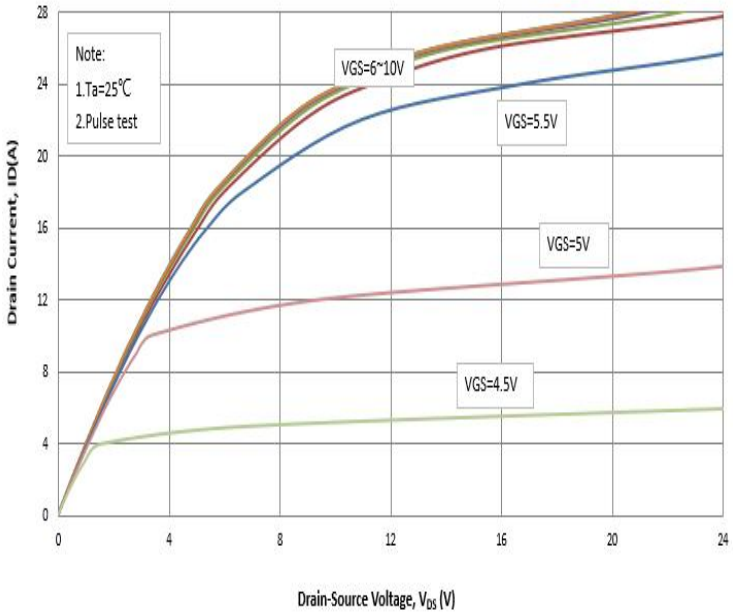

Figure 1. Output characteristics

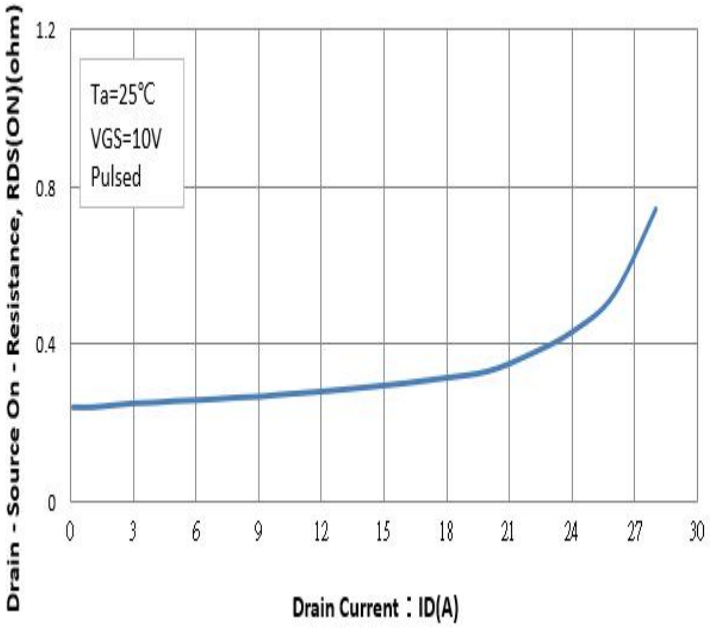

Figure 2. Rdson vs. ID

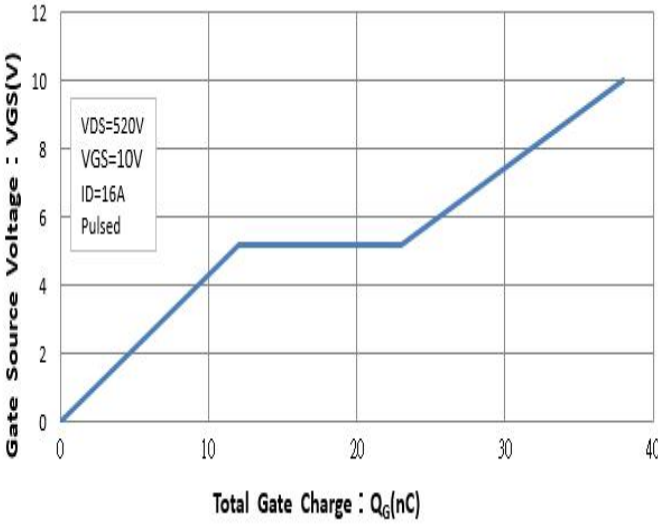

Figure 3. Gate Charge characteristics

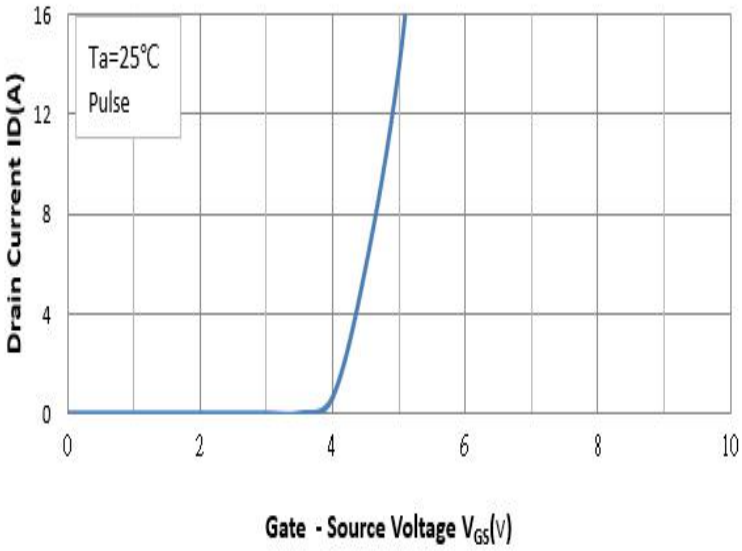

Figure 4. ID vs. Vgs

ELECTRICAL CHARACTERISTICS DIAGRAMS

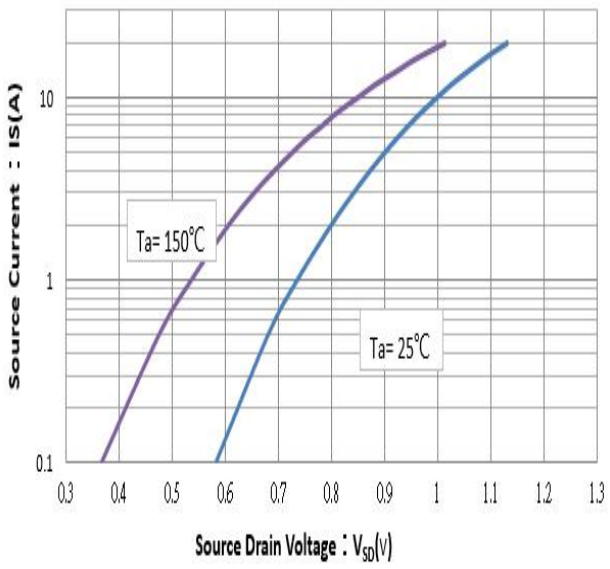

Figure 5. Is vs. VSD

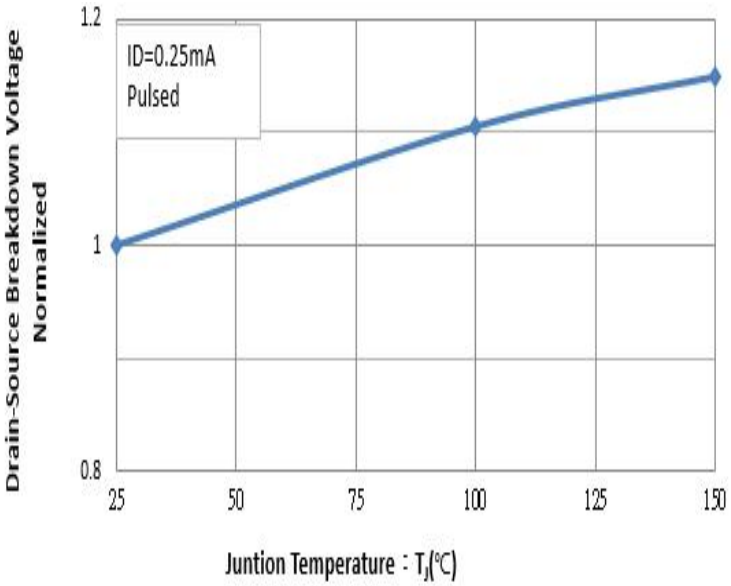

Figure 6. Breakdown vs. Temperature

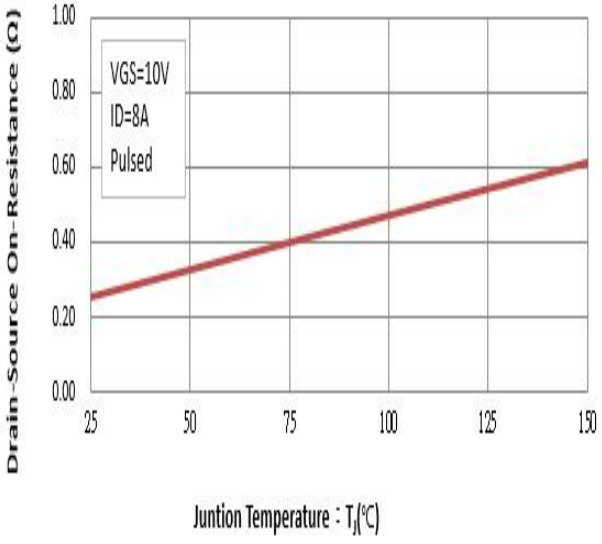

Figure 7. On-Resistance vs. Junction Temperature

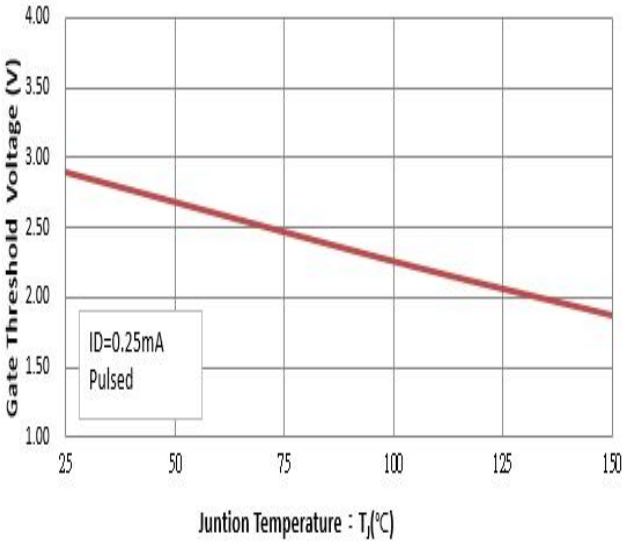

Figure 8. Vth vs. Junction Temperature

ELECTRICAL CHARACTERISTICS DIAGRAMS

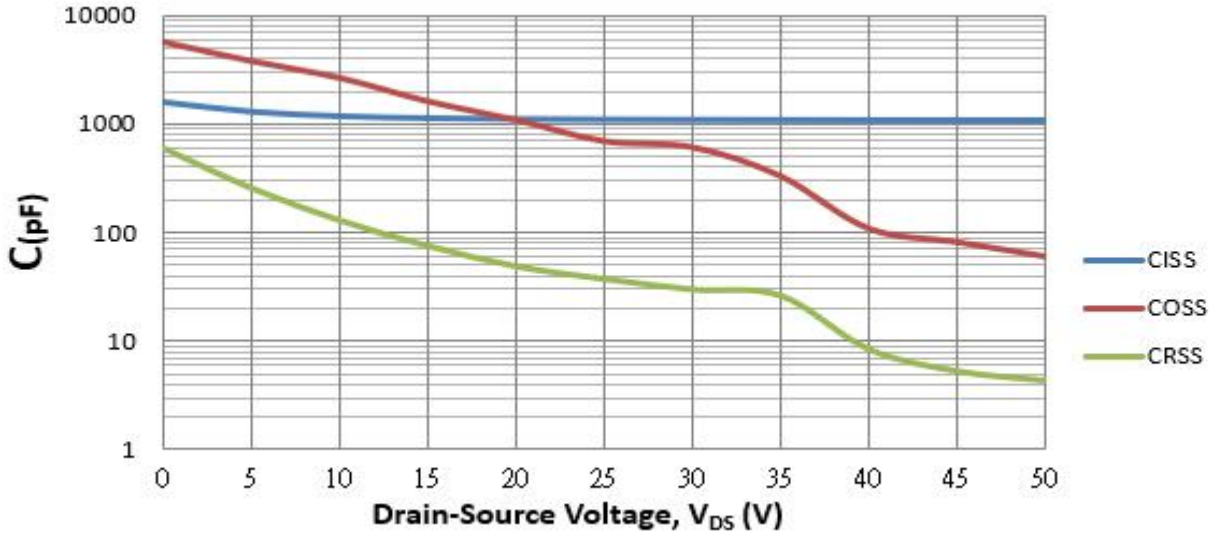

Figure 9. Capacitance characteristics

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