

N-Channel Enhancement Mode Field Effect Transistor

General Description

Greenchip adopts advanced trench gate super junction technology and design to provide excellent $R_{DS(ON)}$ 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

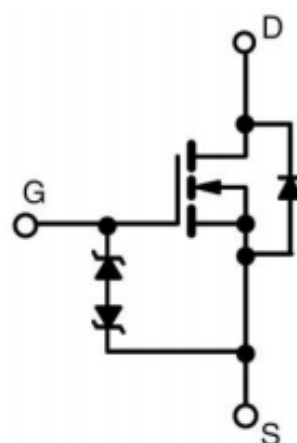
- Large current and voltage handling capability
- Strong surge current prevention
- New technology for high voltage device
- Low on-resistance and low conduction losses
- Small package
- Ultra Low Gate Charge cause lower driving requirements
- ROHS compliant

Typical information

$V_{(BR)DSS}$	$R_{DS(ON)typ}$	I_D
650V	1.16 Ω	5A

Applications

- LCD/LED/PDP TV
- Switched mode power supplies(SMPS)
- Uninterruptible Power Supply (UPS)
- ATX power supplies
- Industrial power applicatio



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	5	A
Drain Current –continuous @100°C	I_D	4	A
Pulsed Drain Current ¹	I_{DM}	20	A
Gate-Source Voltage	V_{GS}	±30	V
Single Pulse Avalanche ²	E_{AS}	125	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	2.5	3.5	4.5	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±30V			±10	μA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 650V, V _{GS} = 0V			1	μA
		V _{DS} = 650V, V _{GS} = 0V, T _J =150oC			100	
On-State Drain Current	R _{DS(ON)}	V _{GS} = 10V, I _D = 2.5A		1.16	1.2	Ω
Body Diode Forward Voltage	V _{SD}	T _J = 25°C, V _{GS} = 0V, I _{SD} = 5A		0.93	1.4	V
DYNAMIC PARAMETERS						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 25V, f = 1 MHz		249		pF
Output Capacitance	C _{oss}			196		
Reverse Transfer Capacitance	C _{rss}			11.6		
Total Gate Charge	Q _g	V _{DD} = 100V, I _D = 10A, V _{GS} = 10V		13.4		nC
Gate-Source Charge	Q _{gs}			5.1		
Gate-Drain Charge	Q _{gd}			2.8		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _(on)	V _{GS} = 10V, V _{DD} = 300V, I _D = 5A, R _G = 25Ω,		14.9		ns
Rise Time	t _r			5.0		
Turn-Off Delay Time	t _(off)			23.4		
Fall Time	t _f			9.9		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _c = 25 °C)						
Continuous Current	I _S				5	A
Forward Voltage	V _{SD}	I _F =I _S , V _{GS} = 0V			0.93	V
Body Diode Reverse Recovery Time	T _{rr}	I _F =I _S , di/dt =100A/us		380		nS
Body Diode Reverse Recovery Charge	Q _{rr}			2.48		uC

ELECTRICAL CHARACTERISTICS DIAGRAMS

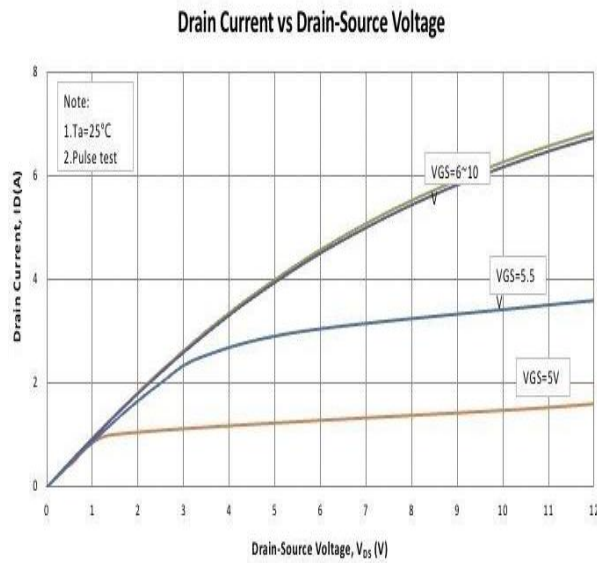


Figure 1. Output characteristics

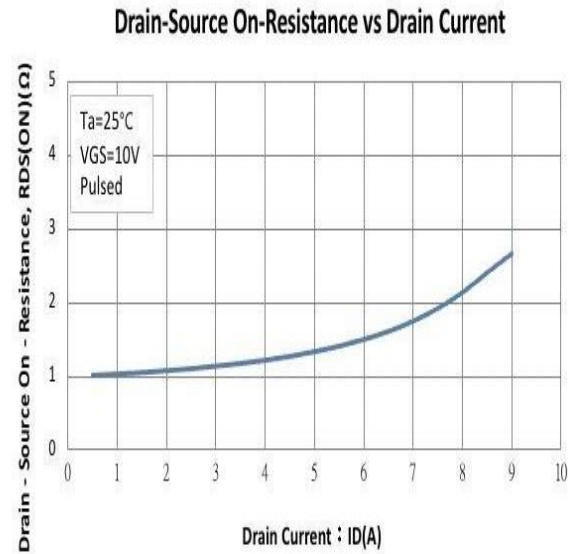


Figure 2. Rdson vs. ID

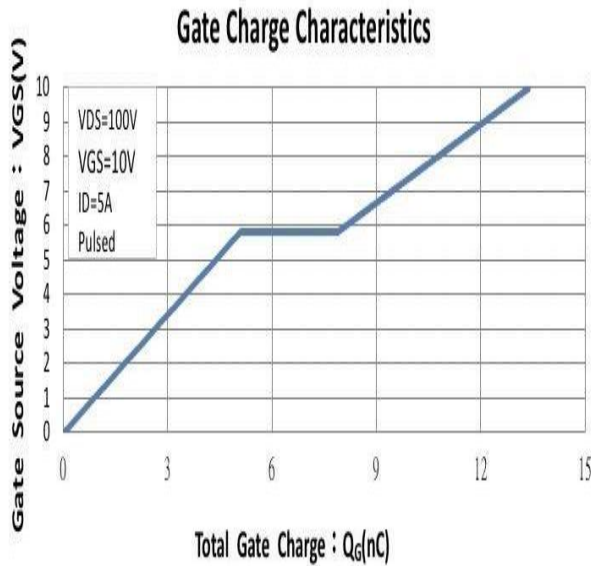


Figure 3. Gate Charge characteristics

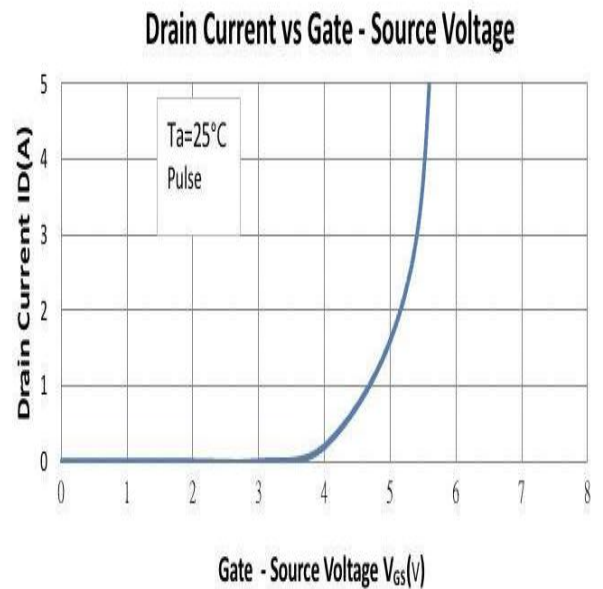


Figure 4. ID vs. VGS

ELECTRICAL CHARACTERISTICS DIAGRAMS

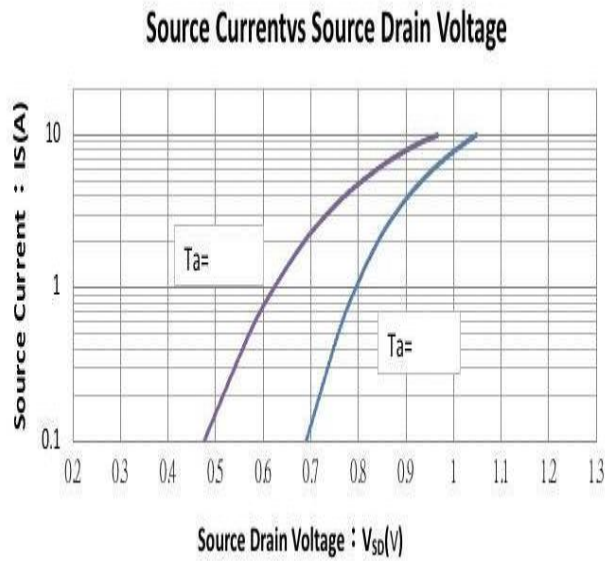


Figure 5. I_S vs. V_{SD}

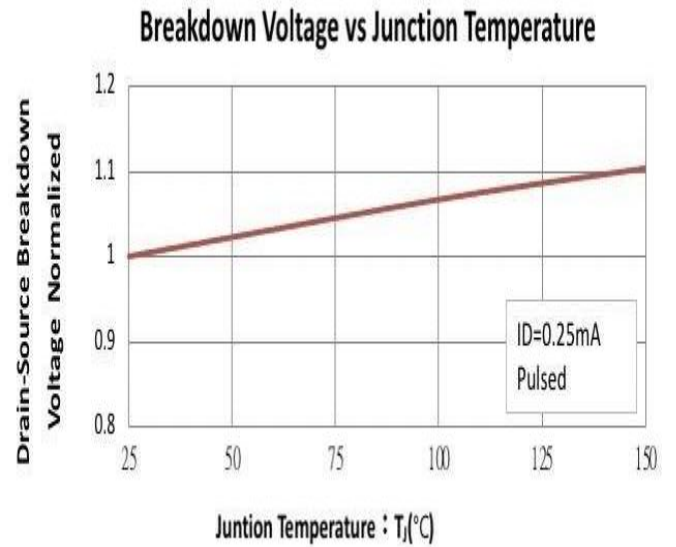


Figure 6. Breakdown vs. Temperature

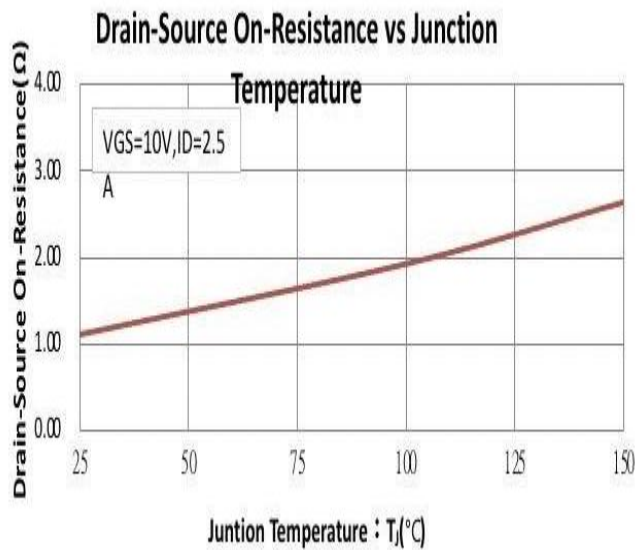


Figure 7. On-Resistance vs. Junction Temperature

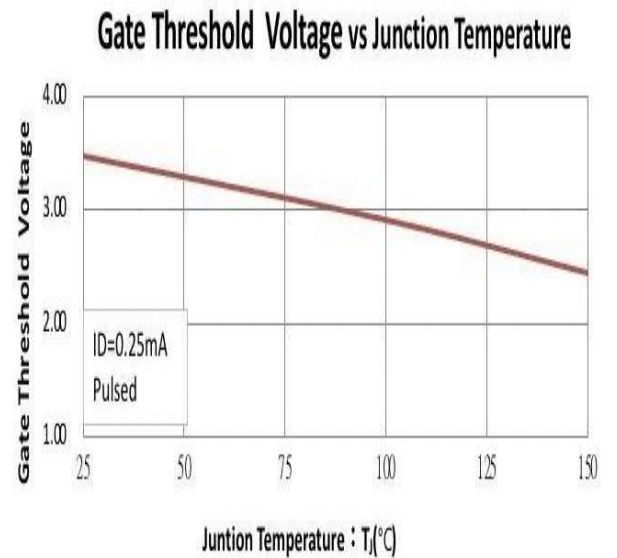


Figure 8. V_{th} vs. Junction Temperature

ELECTRICAL CHARACTERISTICS DIAGRAMS

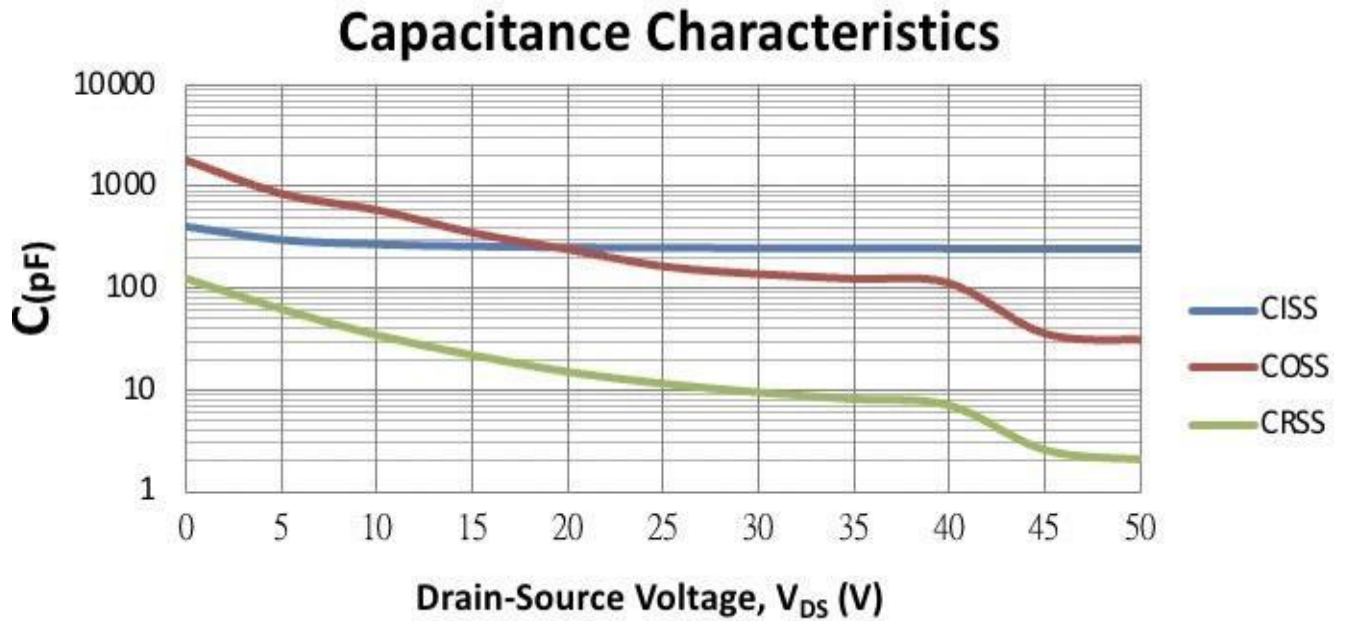


Figure 9. Capacitance characteristics

■ TO-252-2L PACKAGE OUTLINE DIMENSIONS

