

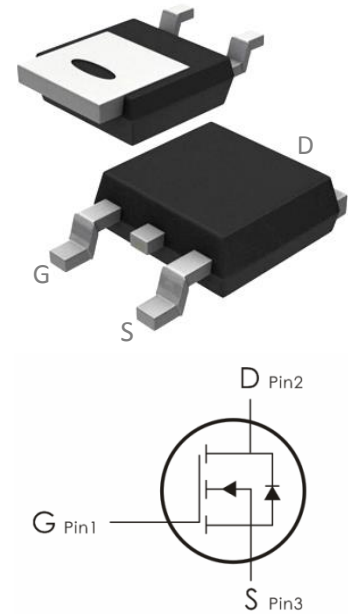
Description:

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) $V_{DS}=100V, I_D=12A, R_{DS(on)} < 135m\Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra $R_{DS(on)}$.
- 5) Excellent package for good heat dissipation.



Absolute Maximum Ratings: ($T_C=25^\circ C$ 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 Current- $T_C=25^\circ C$	12	A
	Continuous Drain Current- $T_C=100^\circ C$	5.1	
	Pulsed Drain Current ¹	28	
E_{AS}	Single Pulse Avalanche Energy ⁴	8	mJ
P_D	Power Dissipation, $T_C=25^\circ C$	20.8	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	6	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ³	62.5	

Electrical Characteristics: ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source 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	---	---	25	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	---	3	V
R _{DS(ON)}	Drain-Source On Resistance ²	V _{GS} =10V, I _D =5A	---	---	135	m Ω
		V _{GS} =4.5V, I _D =3A	---	---	145	
G _{FS}	Forward Transconductance	V _{DS} =10V, I _D =5A	---	17	---	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz	---	580	928	pF
C _{oss}	Output Capacitance		---	27	---	
C _{rss}	Reverse Transfer Capacitance		---	19	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =50V, I _D =5A, V _{GS} =10V, R _{GEN} =3.3Ω	---	6	---	ns
t _r	Rise Time		---	8	---	ns
t _{d(off)}	Turn-Off Delay Time		---	14	---	ns
t _f	Fall Time		---	3	---	ns
Q _g	Total Gate Charge	V _{GS} =4.5V, V _{DS} =10V, I _D =20A	---	27	30	nC
Q _{gs}	Gate-Source Charge		---	6.5	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	6.4	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Source-Drain Diode Forward Voltage ²	V _{GS} =0V, I _S =5A	---	---	1.3	V

t_{rr}	Reverse Recovery Time	$V_{GS}=0V, I_S=5A$ $di/dt=100A/\mu s$	---	20	---	Ns
Q_{rr}	Reverse Recovery Charge		---	18	---	nc

Notes:

1. Pulse width limited by Max. junction temperature.
2. Pulse test
3. Surface mounted on 1 in 2 copper pad of FR4 board
4. Starting $T_J=25^\circ C$, $V_{DD}=50V$, $L=1mH$, $R_g=25\Omega$.

Typical Characteristics: ($T_C=25^\circ C$ unless otherwise noted)

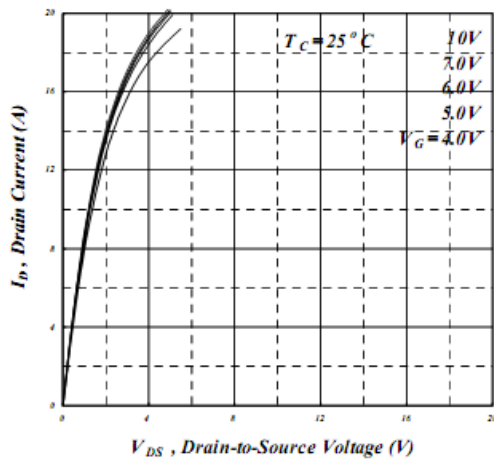


Fig 1. Typical Output Characteristics

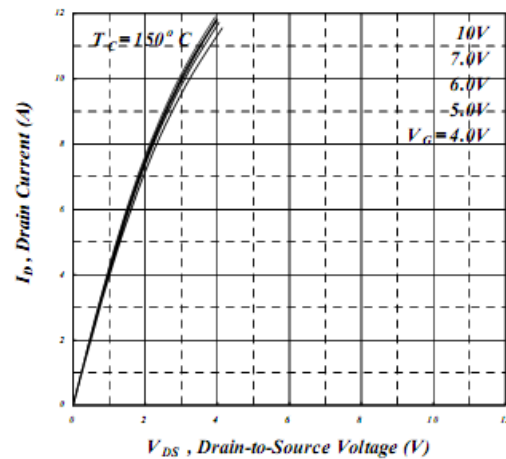


Fig 2. Typical Output Characteristics

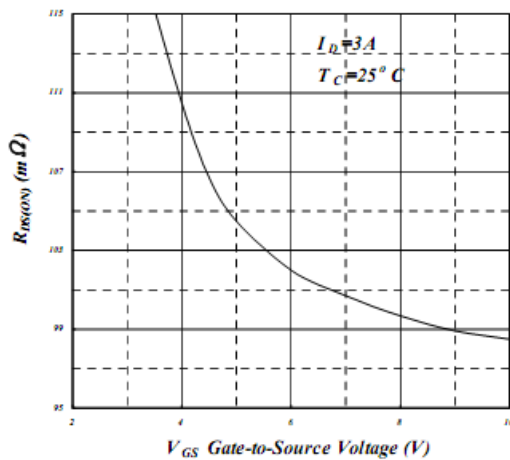


Fig 3. On-Resistance v.s. Gate Voltage

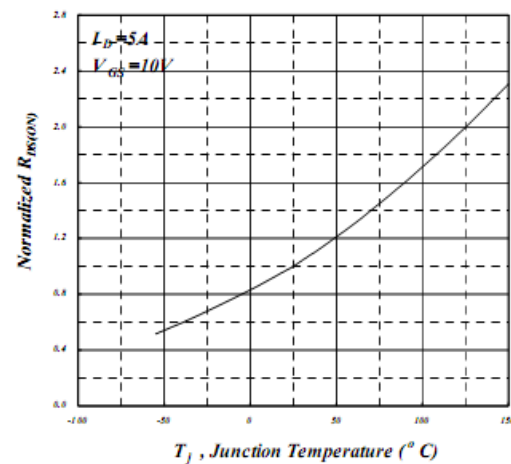


Fig 4. Normalized On-Resistance v.s. Junction Temperature

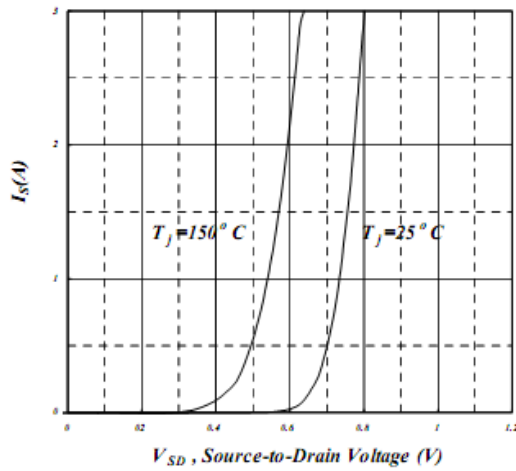


Fig 5. Forward Characteristic of Reverse Diode

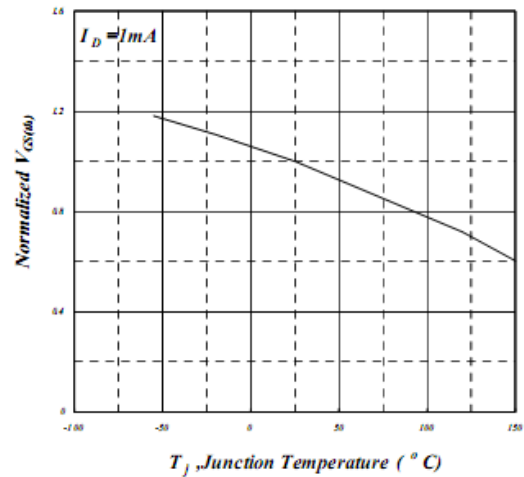


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

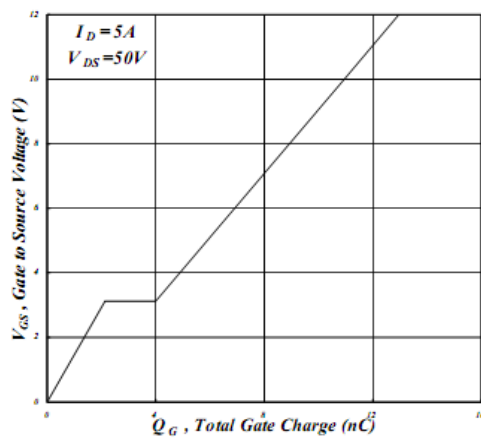


Fig 7. Gate Charge Characteristics

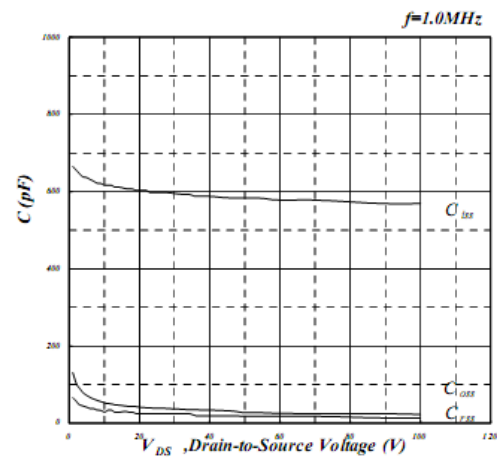


Fig 8. Typical Capacitance Characteristics

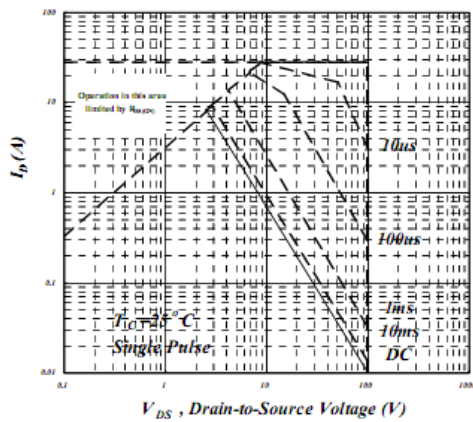


Fig 9. Maximum Safe Operating Area

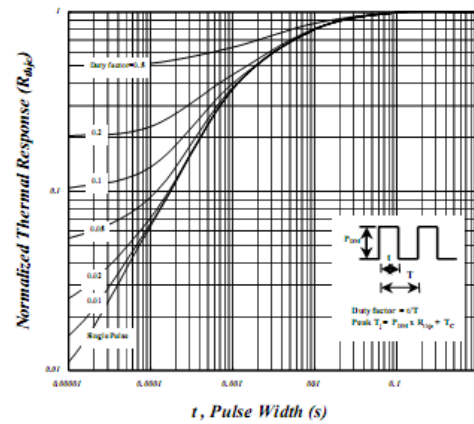


Fig 10. Effective Transient Thermal Impedance

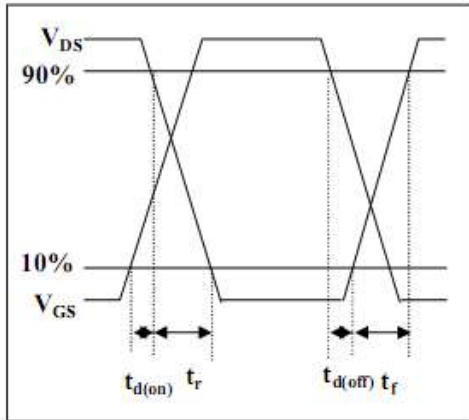


Fig 11. Switching Time Waveform

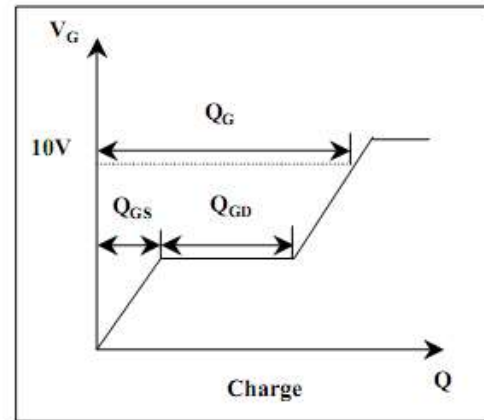


Fig 12. Gate Charge Waveform

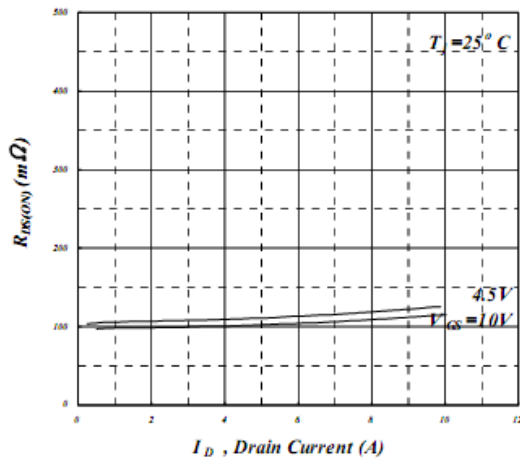


Fig 13. Typ. Drain-Source on State Resistance

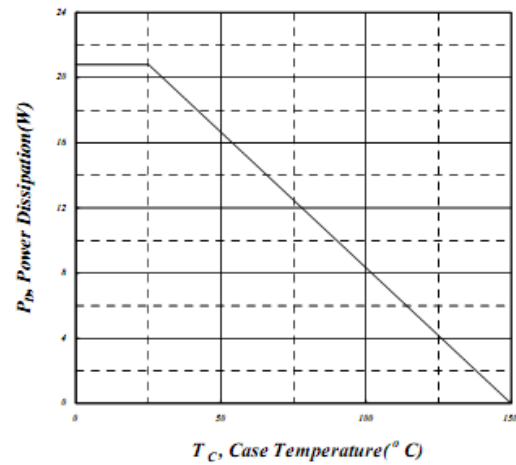


Fig 14. Total Power Dissipation

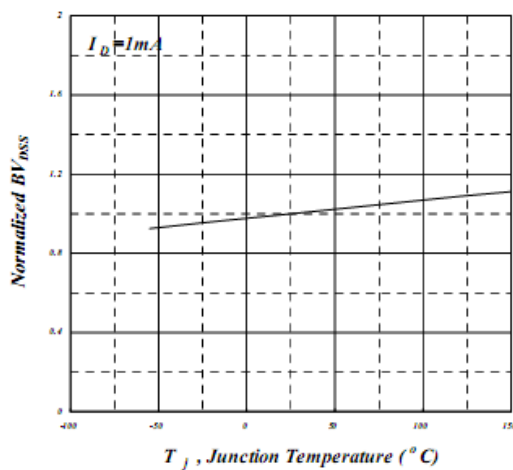


Fig 15. Normalized BV_{DS} v.s. Junction