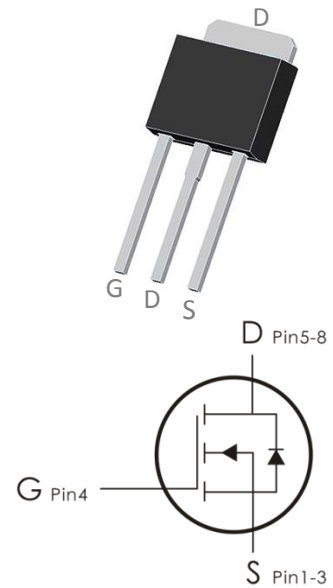


Description:

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) $V_{DS}=100V, I_D=40A, R_{DS(ON)} < 20m\ \Omega @ V_{GS}=10V$
- 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- $T_C=25^\circ C^1$	40	A
	Continuous Drain Current- $T_C=100^\circ C$	---	
	Pulsed Drain Current ²	120	
E_{AS}	Single Pulse Avalanche Energy ⁵	30	mJ
P_D	Power Dissipation ³	72	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	1.74	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction to mbient ⁴	62	$^\circ C/W$

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	$V_{GS}=0V, I_D=250\ \mu\text{A}$	100	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=100V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics³						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	1	---	2.5	V
$R_{DS(on)}$	Drain-Source On Resistance	$V_{GS}=10V, I_D=8A$	---	17	20	m Ω
		$V_{GS}=4.5V, I_D=6A$	---	---	26	
Dynamic Characteristics⁴						
C_{iss}	Input Capacitance	$V_{DS}=50V, V_{GS}=0V, f=1\text{MHz}$	---	1190.6	---	pF
C_{oss}	Output Capacitance		---	194.6	---	
C_{rss}	Reverse Transfer Capacitance		---	4.1	---	
Switching Characteristics⁴						
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=50V, I_D=10A, R_G=2.2\Omega$ $V_{GS}=10V$	---	17.8	---	ns
t_r	Rise Time		---	3.9	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	33.5	---	ns
t_f	Fall Time		---	3.2	---	ns
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DS}=50V,$ $I_D=8A$	---	19.8	---	nC
Q_{gs}	Gate-Source Charge		---	2.4	---	nC
Q_{gd}	Gate-Drain "Miller" Charge		---	5.3	---	nC
Drain-Source Diode Characteristics						
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{SD}	Source-Drain Diode Forward Voltage	$V_{GS}=0V, I_S=8A$	---	---	1.3	V

LS	Continuous Source Current	VGS < Vth	---	---	40	A
LSp	Pulsed Source Current		---	---	120	
Trr	Reverse Recovery Time	I _S =8 A, di/dt=100 A/μs	---	50.2	---	NS
Qrr	Reverse Recovery Charge		---	95.1	---	NC

Notes:

- 1) Calculated continuous current based on maximum allowable junction temperature.
- 2) Repetitive rating; pulse width limited by max. junction temperature.
- 3) Pd is based on max. junction temperature, using junction-case thermal resistance.
- 4) The value of R_{θJA} is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_a=25 °C.
- 5) V_{DD}=50 V, R_G=25 Ω, L=0.3 mH, starting T_j=25 °C.

Typical Characteristics: (T_c=25°C unless otherwise noted)

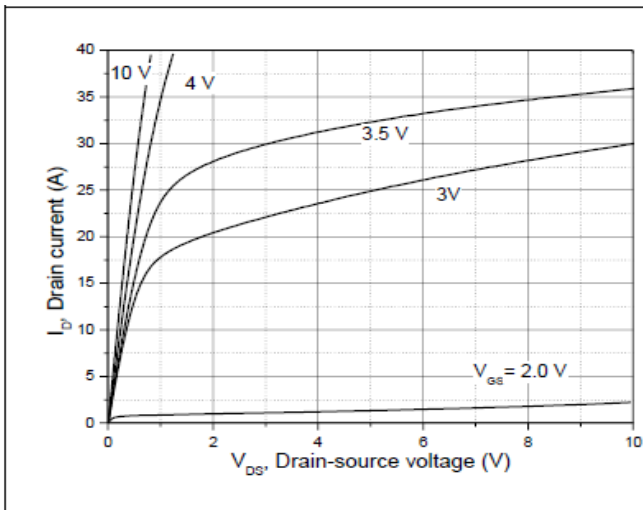


Figure 1, Typ. output characteristics

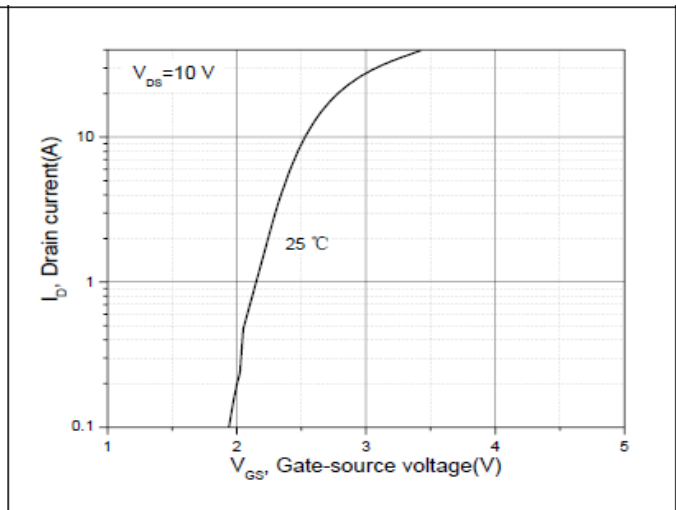


Figure 2, Typ. transfer characteristics

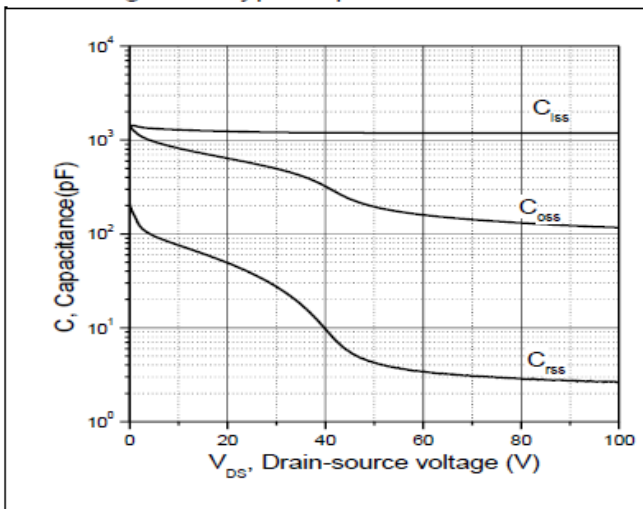


Figure 3, Typ. capacitances

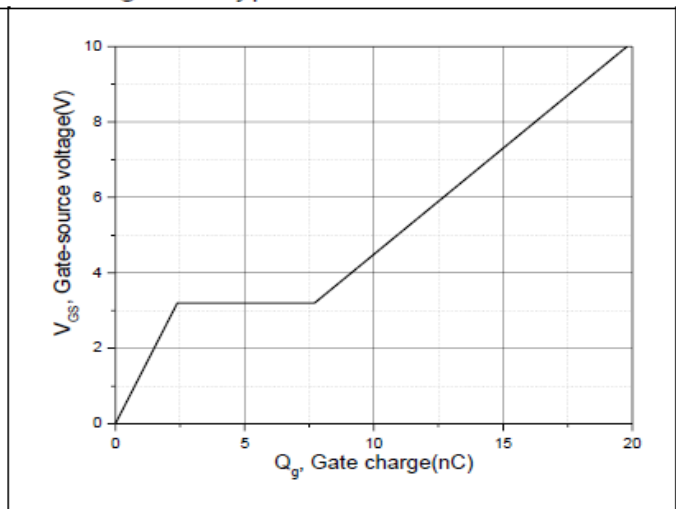


Figure 4, Typ. gate charge

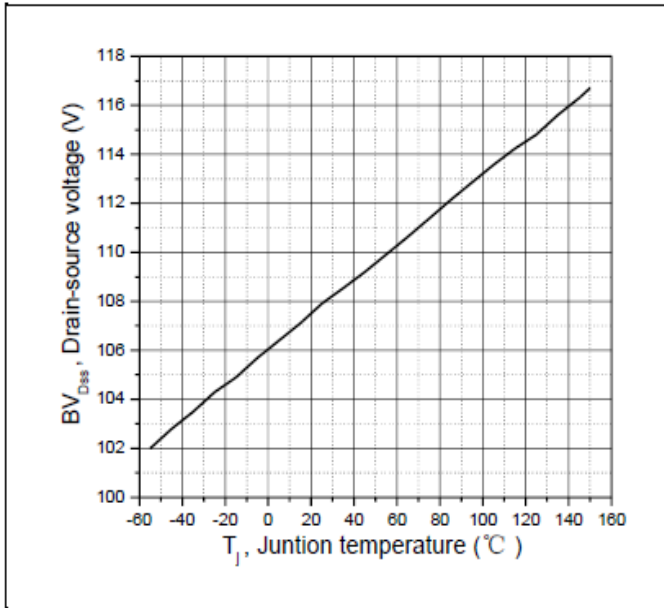


Figure 5, Drain-source breakdown voltage

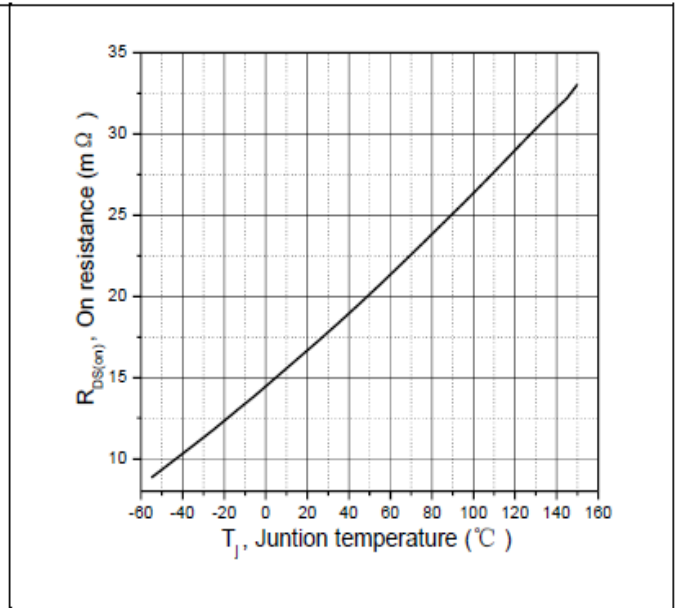


Figure 6, Drain-source on-state resistance

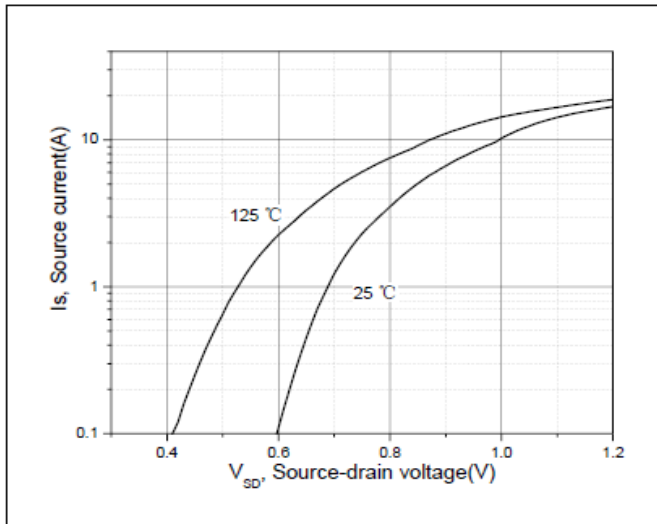


Figure 7, Forward characteristic of body diode

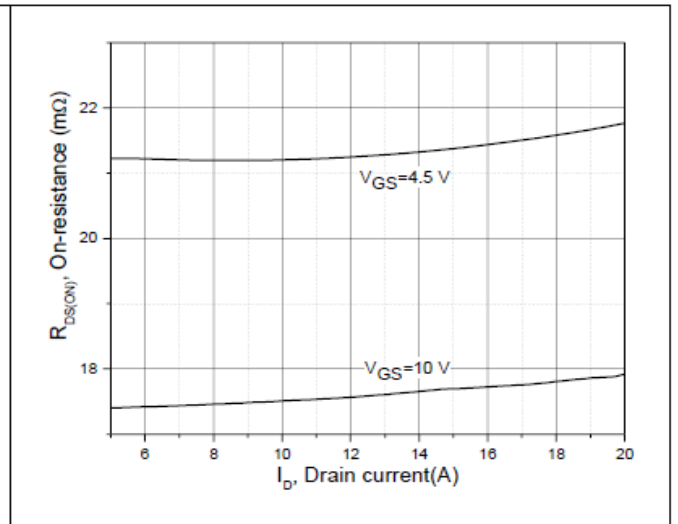


Figure 8, Drain-source on-state resistance

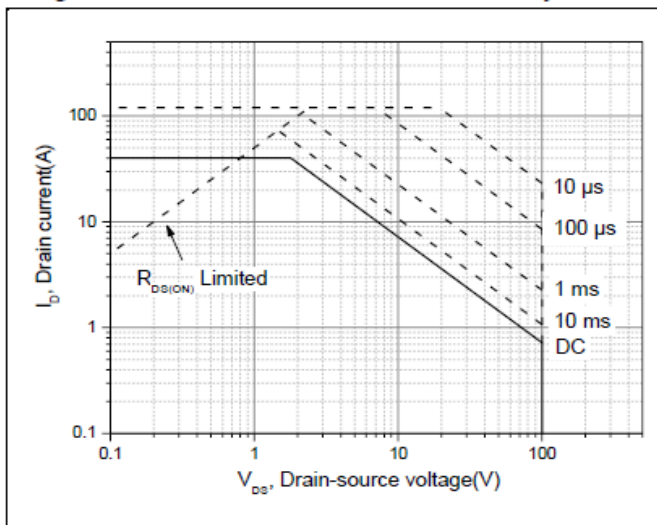


Figure 9, Safe operation area $T_C=25\text{ }^\circ\text{C}$



0086-0755-8278-9056