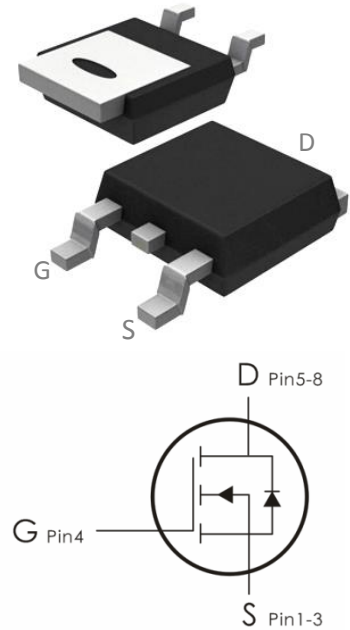


Description:

This N-Channel MOSFET uses advanced SGT 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) $V_{DS}=60V, I_D=130A, R_{DS(ON)} < 3.5m\Omega @ V_{GS}=10V$
- 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	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ C^1$	130	A
	Continuous Drain Current- $T_C=100^\circ C$	---	
	Pulsed Drain Current ²	390	
E_{AS}	Single Pulse Avalanche Energy ⁵	80	mJ
P_D	Power Dissipation ³	140	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	0.89	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction to ambient 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	$V_{GS}=0V, I_D=250\ \mu\text{A}$	60	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=60V$	---	---	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	$V_{GS}=10V, I_D=20A$	---	3	3.5	m Ω
		$V_{GS}=4.5V, I_D=10A$	---	3.5	4.5	
Dynamic Characteristics⁴						
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V,$ $f=100\text{KHz}$	---	5377	---	pF
C_{oss}	Output Capacitance		---	1666	---	
C_{rss}	Reverse Transfer Capacitance		---	77.7	---	
Switching Characteristics⁴						
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=30V, I_D=25A, R_G=2\Omega$ $V_{GS}=10V$	---	22.5	---	ns
t_r	Rise Time		---	6.7	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	80.3	---	ns
t_f	Fall Time		---	26.8	---	ns
Q_g	Total Gate Charge	$V_{GS}=10V, V_{DS}=30V,$ $I_D=25A$	---	66.1	---	nC
Q_{gs}	Gate-Source Charge		---	10.7	---	nC
Q_{gd}	Gate-Drain "Miller" Charge		---	10.9	---	nC
Drain-Source Diode Characteristics						
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{SD}	Source-Drain Diode Forward Voltage	$V_{GS}=0V, I_S=20A$	---	---	1.3	V

LS	Continuous Source Current	$V_{GS} < V_{th}$	---	---	130	A
LSp	Pulsed Source Current		---	---	390	
Trr	Reverse Recovery Time	$I_S = 25 \text{ A}$, $di/dt = 100 \text{ A}/\mu\text{s}$	---	68.3	---	NS
Qrr	Reverse Recovery Charge		---	73	---	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 $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_a = 25^\circ\text{C}$.
- 5) $V_{DD} = 50 \text{ V}$, $R_G = 25 \Omega$, $L = 0.3 \text{ mH}$, starting $T_j = 25^\circ\text{C}$.

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

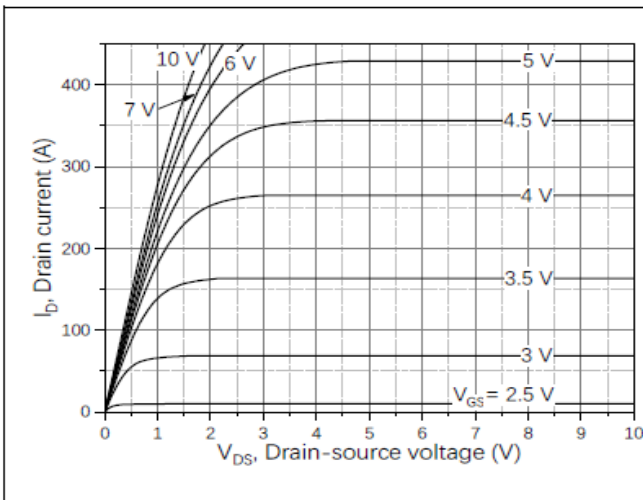


Figure 1, Typ. output characteristics

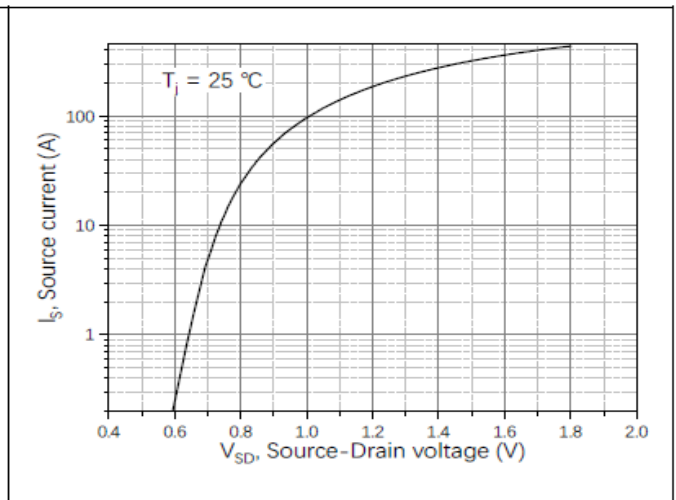


Figure 2, Typ. transfer characteristics

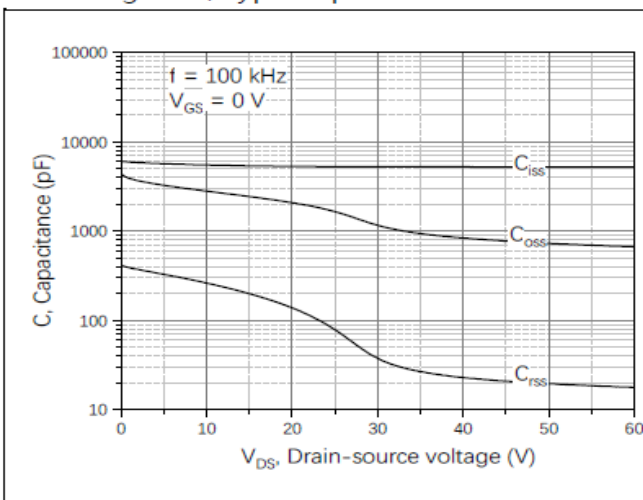


Figure 3, Typ. capacitances

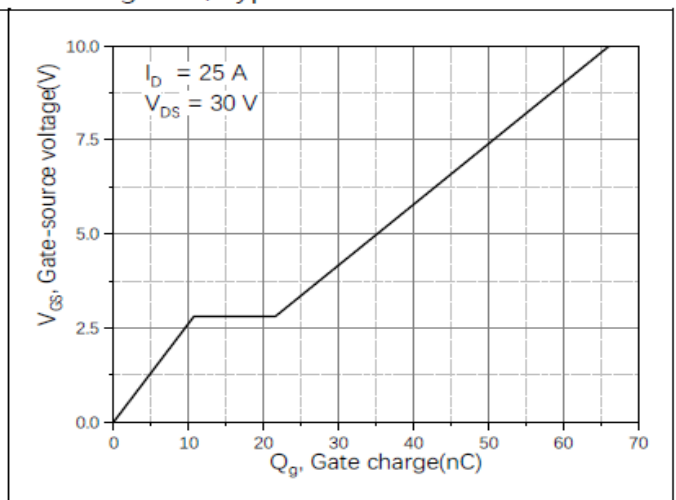


Figure 4, Typ. gate charge

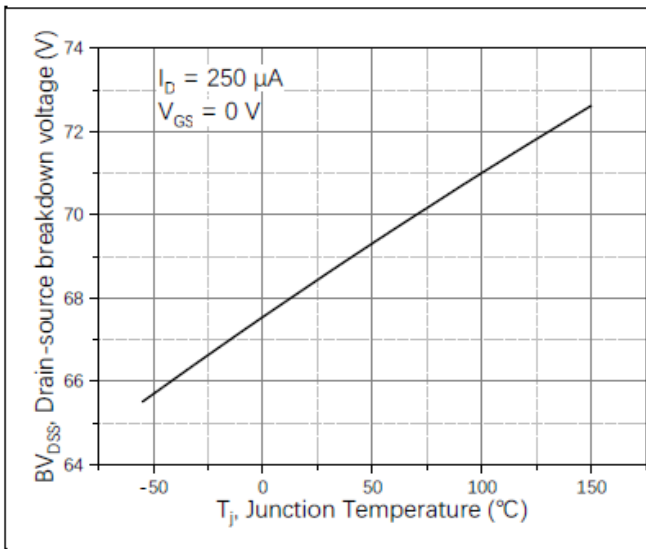


Figure 5, Drain-source breakdown voltage

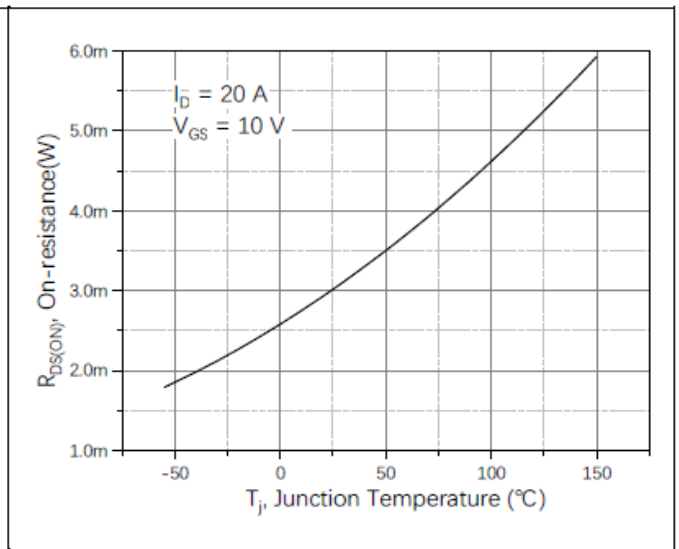


Figure 6, Drain-source on-state resistance

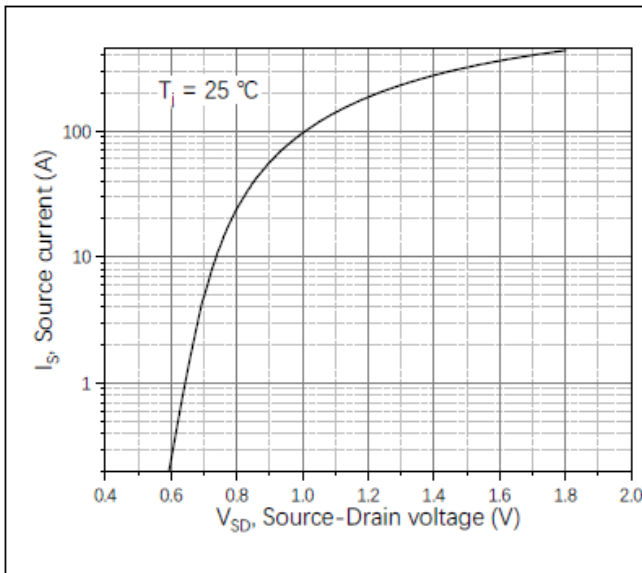


Figure 7, Forward characteristic of body diode

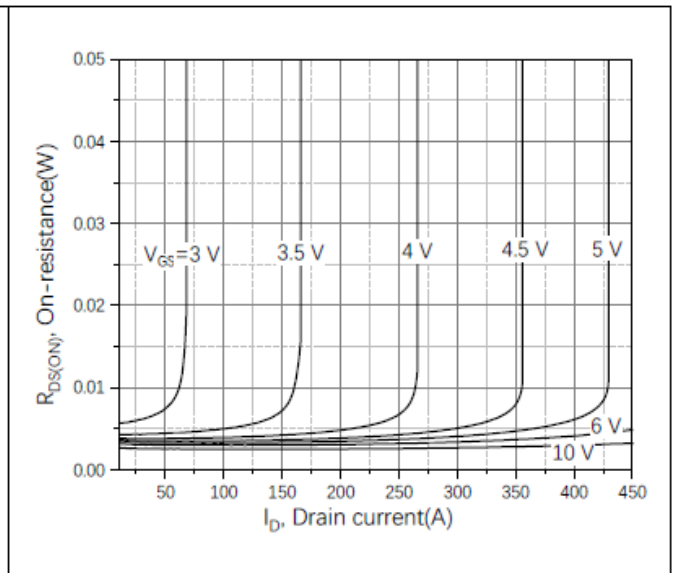


Figure 8, Drain-source on-state resistance

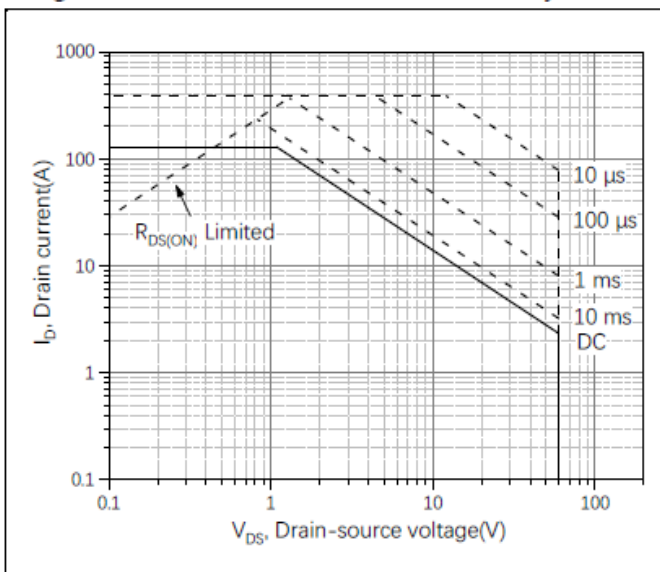


Figure 9, Safe operation area $T_C=25\text{ }^{\circ}\text{C}$



0086-0755-8278-9056