

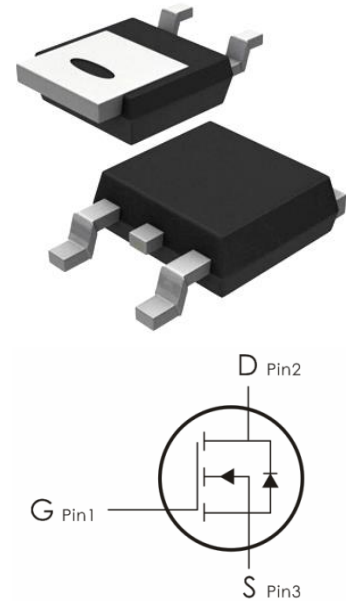
Description:

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) $V_{DS}=100V, I_D=60A, R_{DS(on)} < 12m\Omega @ V_{GS}=10V$
- 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- $T_C=25^\circ C^1$	60	A
	Pulsed Drain Current ²	180	
P_D	Power Dissipation ³ , $T_C=25^\circ C^3$	107	W
E_{AS}	Single pulsed avalanche energy ⁴	65	MJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +175	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case ¹	1.17	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ⁴	62	

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	100	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =60V	---	---	1	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	1.5	---	2.5	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =10V, I _D =20A	---	9	12	m Ω
		V _{GS} =4.5V, I _D =10A	---	12	14	
R _g	Gate resistance	f= 1 MHz, Open drain	5.5		---	Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz	---	1998.1	---	pF
C _{oss}	Output Capacitance		---	321.7	---	
C _{rss}	Reverse Transfer Capacitance		---	7.1	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =50V, I _D =25A, V _{GS} =10V, R _{GEN} =2Ω	---	22.1	---	ns
t _r	Rise Time		---	5.2	---	ns
t _{d(off)}	Turn-Off Delay Time		---	44	---	ns
t _f	Fall Time		---	8.4	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =50V, I _D =25A	---	28.9	---	nC
Q _{gs}	Gate-Source Charge		---	6	---	
V _{plateau}	Gate plateau voltage				3.7	---

Q_{gd}	Gate-Drain "Miller" Charge		---	6.8	---	
Drain-Source Diode Characteristics						
I_S	Diode forward current	$V_{GS} < V_{th}$	---	---	60	A
I_{SP}	Pulsed source current		---	---	180	
V_{SD}	Source-Drain Diode Forward Voltage	$V_{GS}=0V, I_S=20A$	---	---	1.3	V
I_{rrm}	Peak reverse recovery current	$I_S=25 A,$ $di/dt=100 A/\mu s$		6.4	---	A
trr	Reverse Recovery Time			102.9		Ns
qrr	Reverse Recovery Charge			379	---	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) $V_{DD}=50 V$, $R_G=25 \Omega$, $L=0.3 mH$, starting $T_J=25 ^\circ C$.
4 board with 2oz. Copper, in a
- 5) The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-still air environment with $T_a=25 ^\circ C$.

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

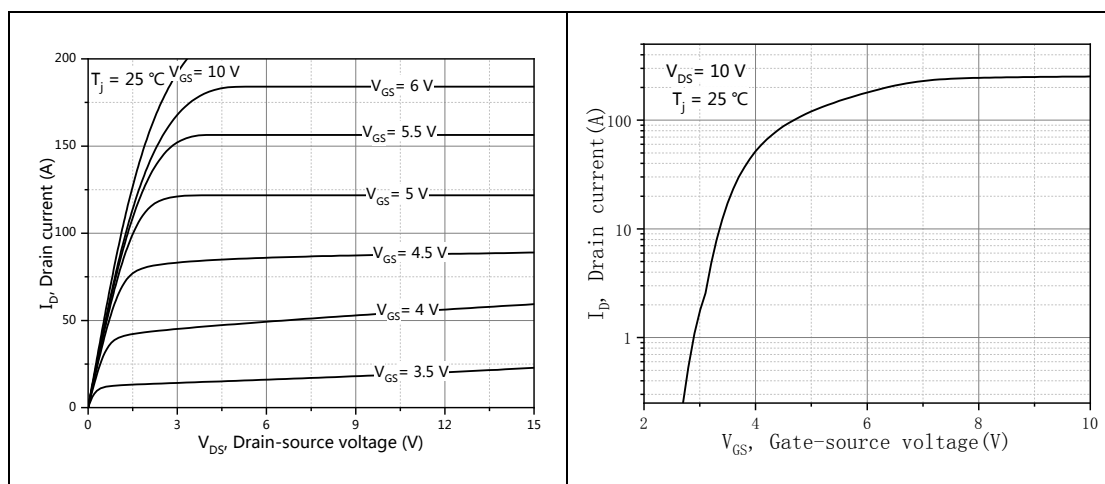


Figure 1, Typ. output characteristics

Figure 2, Typ. transfer characteristics

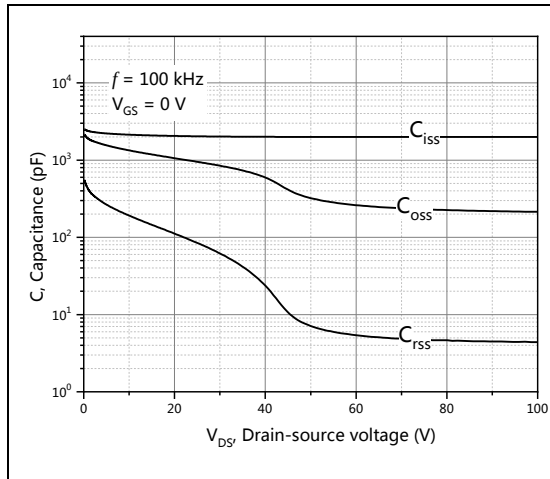


Figure 3, Typ. capacitances

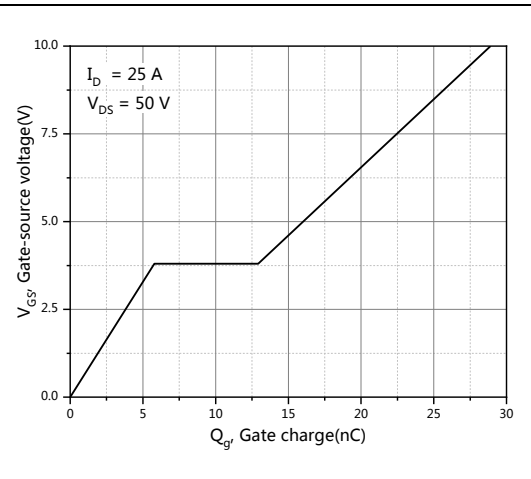


Figure 4, Typ. gate charge

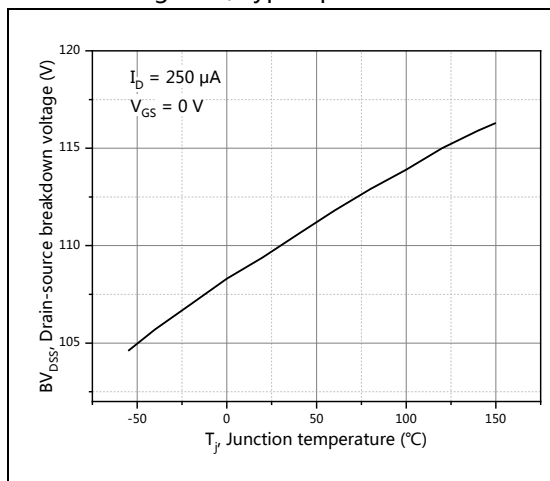


Figure 5, Drain-source breakdown voltage

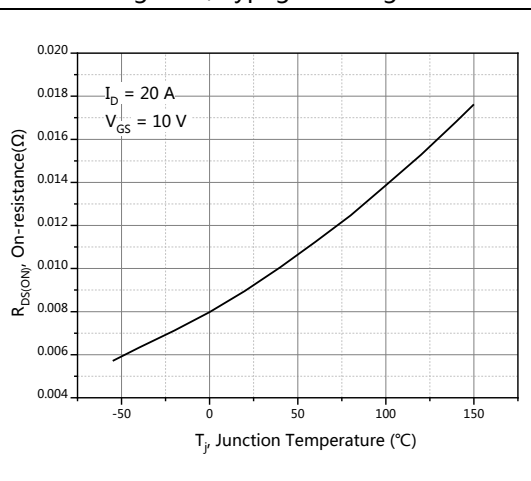


Figure 6, Drain-source on-state resistance

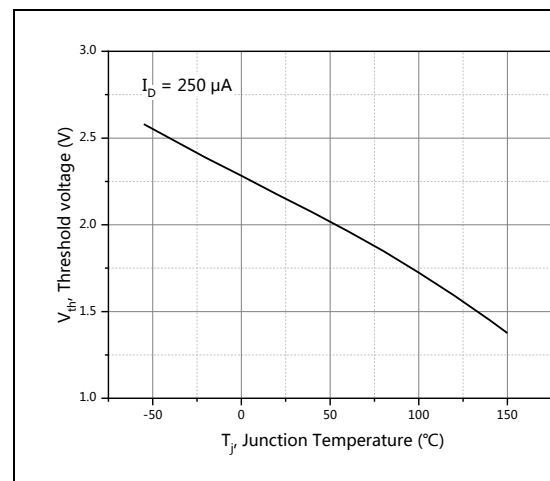


Figure 7, Threshold voltage

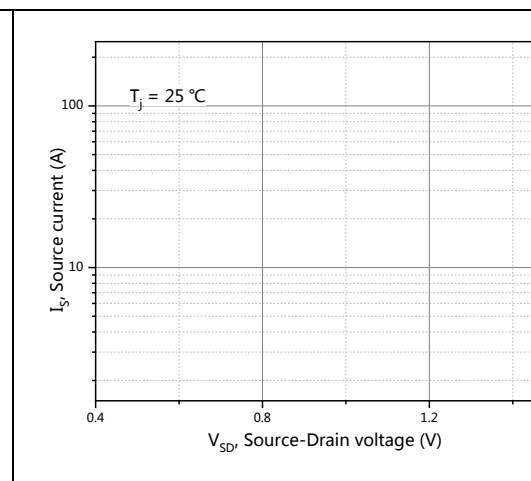


Figure 8, Forward characteristic of body diode

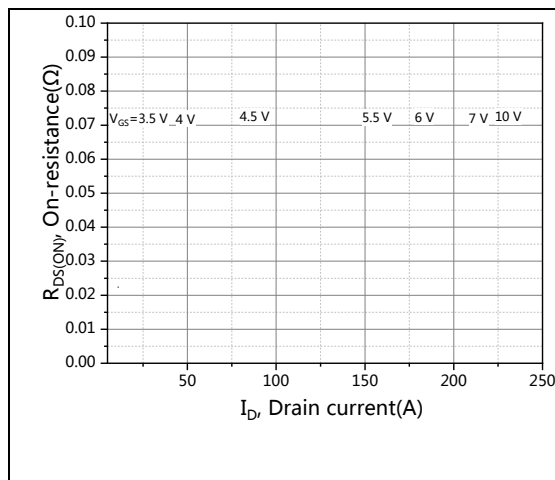


Figure 9, Drain-source on-state resistance

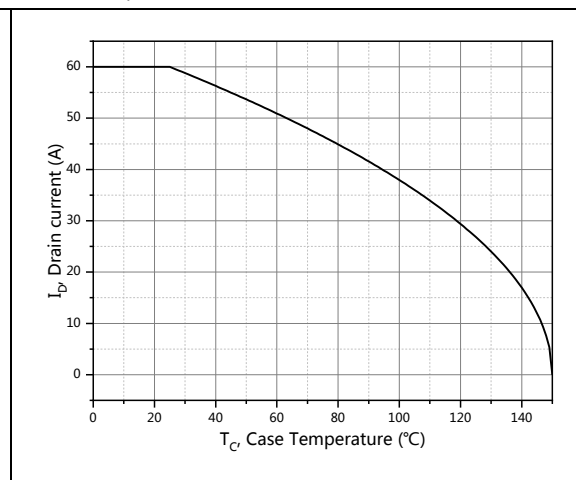


Figure 10, Drain current

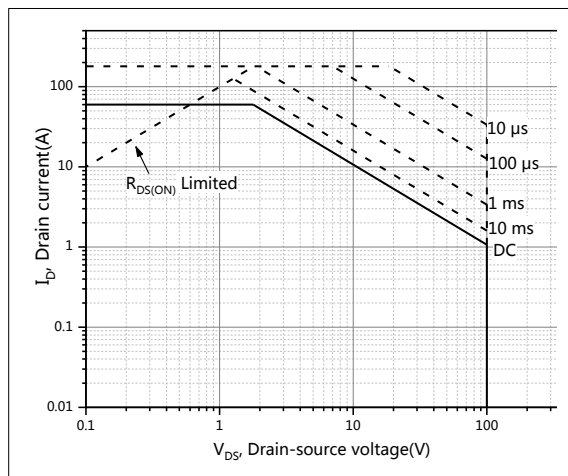


Figure 11, Safe operation area $T_C=25\text{ }^{\circ}\text{C}$



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