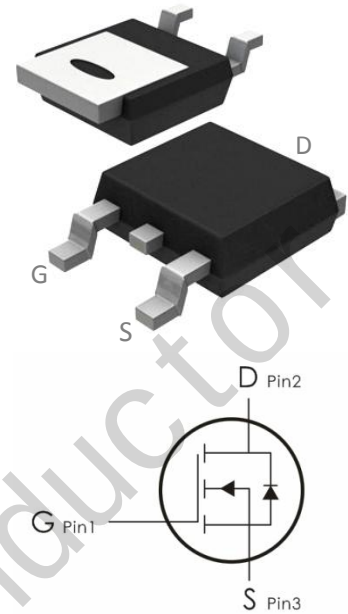


Description:

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) $V_{DS}=60V, I_D=70A, R_{DS(on)} < 6m\Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(on)}$.
- 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- $t_c=25^\circ C^1$	70	A
I_{DM}	Pulsed Drain Current ²	210	A
P_D	Continuous-Source Current ³	87	W
E_{AS}	Single pulsed avalanche energy ⁵	66	mJ
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	1.4	$^\circ C/W$
$R_{\theta JA}$	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 μ A	60	---	---	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	1.0	---	2.5	V
R _{DS(on)}	Drain-Source On Resistance	V _{GS} =10V, I _D =20A	---	4.7	6	m Ω
	Drain-Source On Resistance	V _{GS} =4.5V, I _D =10A	---	6.4	10	m Ω
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz	---	2135	---	pF
C _{oss}	Output Capacitance		---	331	---	
C _{rss}	Reverse Transfer Capacitance		---	10.5	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DS} =50V, I _D =25A, V _{GS} =10V, R _G =2Ω	---	22.8	--	ns
t _r	Rise Time		---	6.4	---	ns
t _{d(off)}	Turn-Off Delay Time		---	45.6	---	ns
t _f	Fall Time		---	20.3	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =50V, I _D =25A	---	29	---	nC
Q _{gs}	Gate-Source Charge		---	5.7	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	6.0	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Source-Drain Diode Forward Voltage	V _{GS} =0V, I _S =20A	---	---	1.3	V
trr	Reverse Recovery Time	V _{GS} =0V, I _{DS} =25 A	---	50.3	---	n s
qrr	Reverse Recovery Charge	dI _{SD} /dt = 100 A/ μ s		45.1	---	n C

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. $V_{DD}=30\text{ V}$, $V_{GS}=10\text{ V}$, $L=0.3\text{ mH}$, starting $T_j=25^\circ\text{C}$.

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

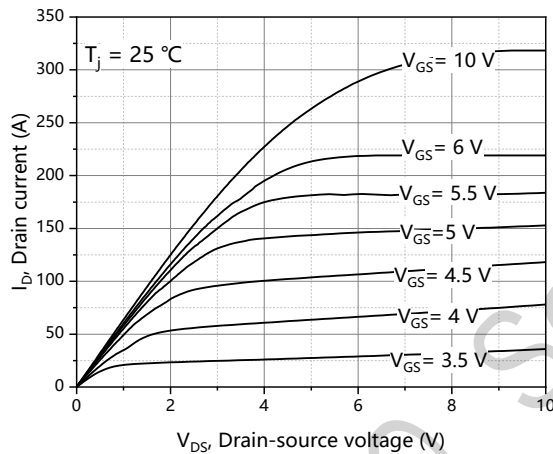


Figure 1. Typ. output characteristics

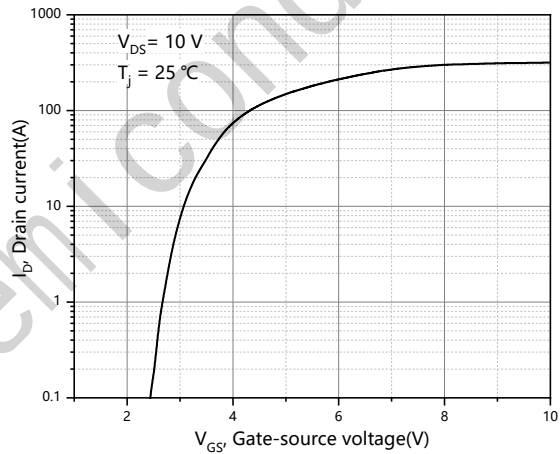


Figure 2. Typ. transfer characteristics

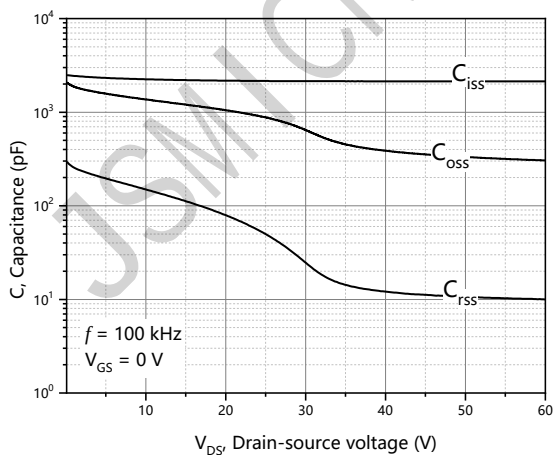


Figure 3. Typ. capacitances

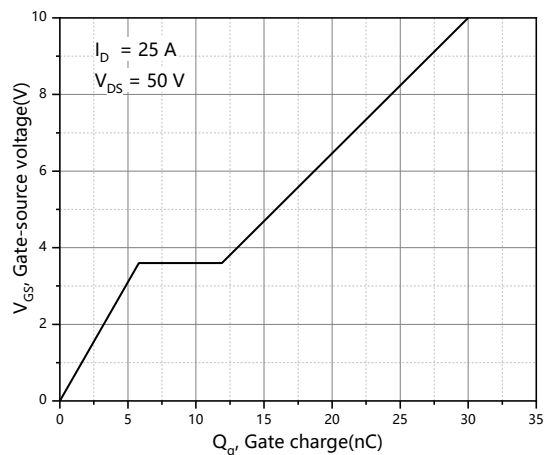


Figure 4. Typ. gate charge

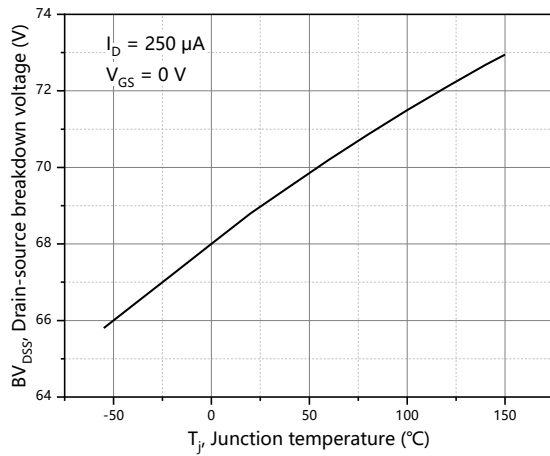


Figure 5. Drain-source breakdown voltage

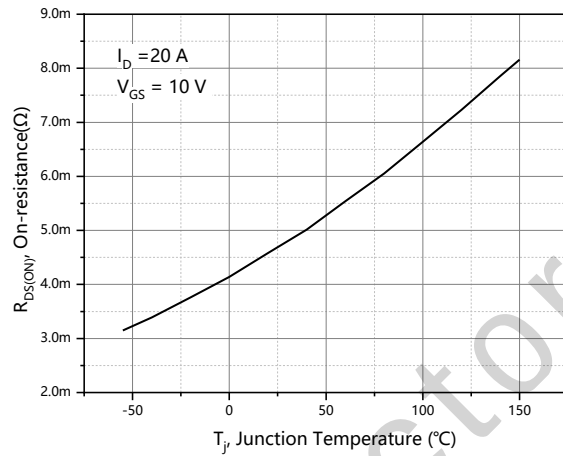


Figure 6. Drain-source on-state resistance

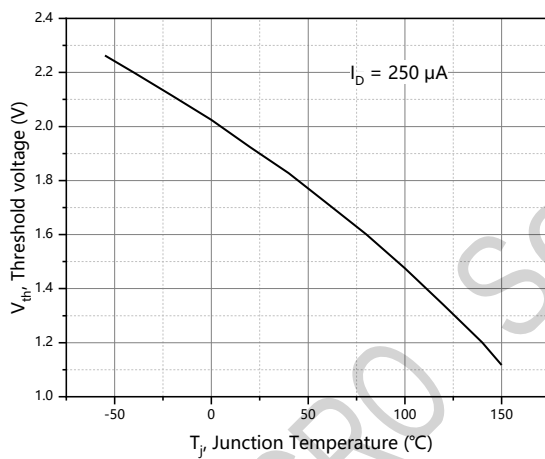


Figure 7. Threshold voltage

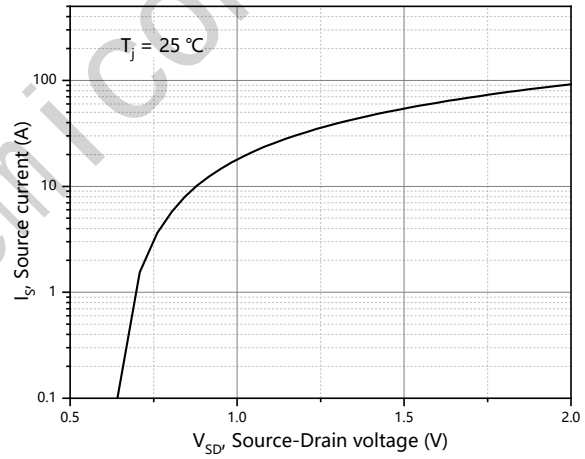


Figure 8. Forward characteristic of body diode

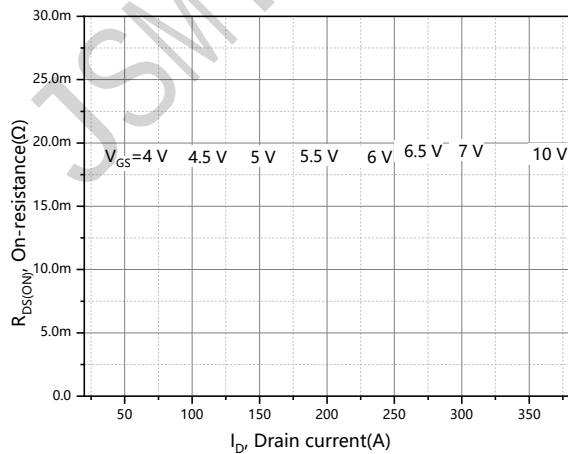


Figure 9. Drain-source on-state resistance

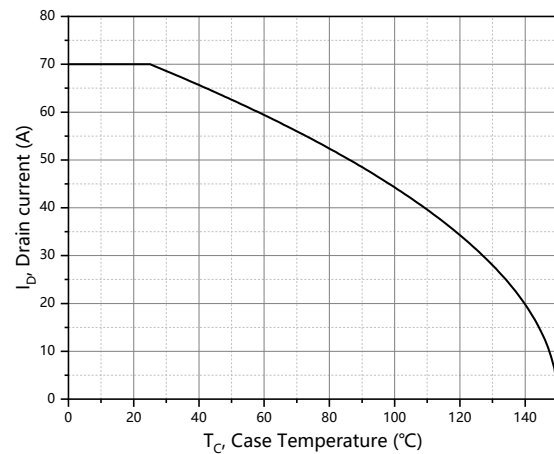


Figure 10. Drain current

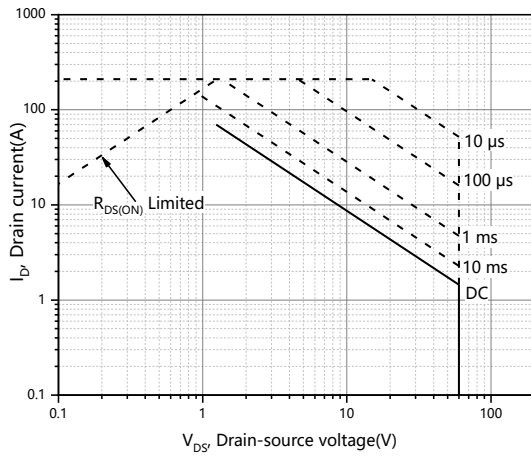


Figure 11. Safe operation area $T_C = 25^\circ\text{C}$

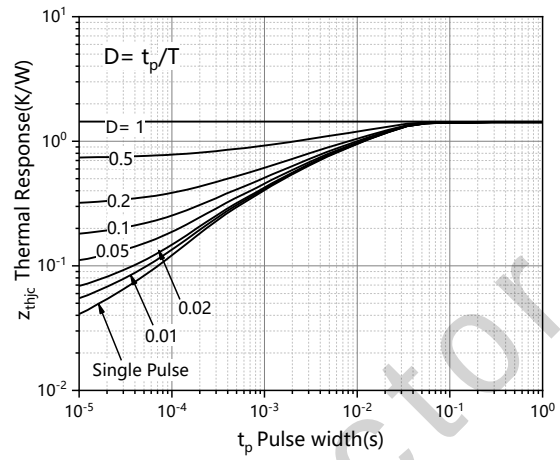


Figure 12. Max. transient thermal impedance

Package Mechanical Data: TO-252-3L

