

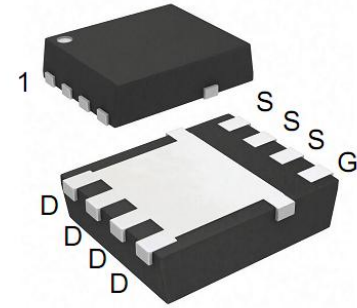
## 150V N-Ch Power MOSFET

### Description:

This N-Channel MOSFET uses advanced SGT technology and

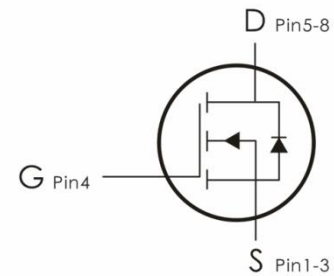
design to provide excellent  $R_{DS(on)}$  with low gate charge.

It can be used in a wide variety of applications.



### Features:

- 1)  $V_{DS}=150V, I_D=50A, R_{DS(ON)} < 18m\ \Omega @ V_{GS}=10V$
- 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.



### Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
AON6250	N6250	DFN5*6-8	5000 pcs/Reel

### Absolute Maximum Ratings: ( $T_C=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
$V_{DS}$	Drain-Source Voltage	150	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current <sup>1</sup>	50	A
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	200	
$P_D$	Power Dissipation <sup>3</sup>	110	W
$E_{AS}$	Single pulse avalanche energy <sup>5</sup>	29	mJ
$T_J, T_{STG}$	Operating and Storage Junction Temperature Range	-55-+150	$^\circ\text{C}$

### Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.14	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient <sup>4</sup>	62	$^\circ\text{C}/\text{W}$

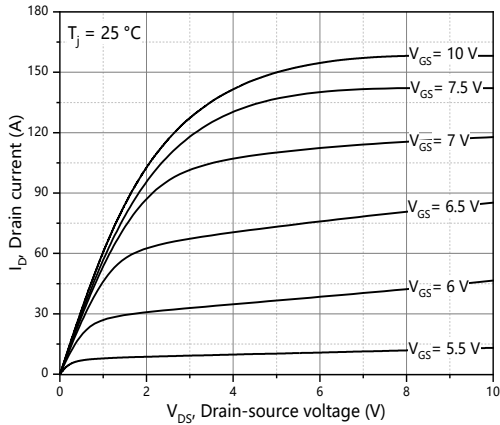
**Electrical Characteristics:** ( $T_C=25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	150	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=135V$	---	---	1	$\mu\text{A}$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	2.5	---	4.5	V
$R_{DS(ON)}$	Drain-Source On Resistance	$V_{GS}=10V, I_D=20A$	---	14	18	$\text{m}\Omega$
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	3339	---	pF
$C_{oss}$	Output Capacitance		---	1099	--	
$C_{rss}$	Reverse Transfer Capacitance		---	104	---	
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=80V, I_D=40A,$ $R_{ENG}=2\ \Omega, V_{GS}=10V$	---	17.4	---	ns
$t_r$	Rise Time		---	12.2	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	29.7	---	ns
$t_f$	Fall Time		---	10.2	---	ns
$Q_g$	Total Gate Charge	$V_{GS}=10V, V_{DS}=80V,$ $I_D=40A$	---	42	---	nc
$Q_{gs}$	Gate-Source Charge		---	16	---	nc
$Q_{gd}$	Gate-Drain "Miller" Charge		---	9	---	nc
<b>Drain-Source Diode Characteristics</b>						
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_{SD}=20A$	---	---	1.3	V
$I_S$	Continuous Drain Current	$V_D=V_G=0V$	---	---	50	A
$I_{SM}$	Pulsed Drain Current		---	---	200	A
$T_{rr}$	Reverse Recovery Time	$I_F=40A, T_J=25^\circ\text{C}$	---	101	---	ns
$Q_{rr}$	Reverse Recovery Charge	$di/dt=100A/\mu\text{s}$	---	254	---	nc

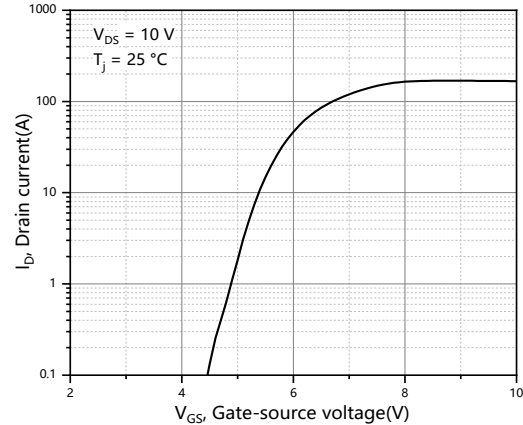
**Notes:**

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 in2 FR-4 board with 2oz. Copper, in a still air environment with  $T_a=25\text{ }^\circ\text{C}$ .
5.  $V_{DD}=50\text{ V}$ ,  $V_{GS}=10\text{ V}$ ,  $L=0.3\text{ mH}$ , starting  $T_j=25\text{ }^\circ\text{C}$ .

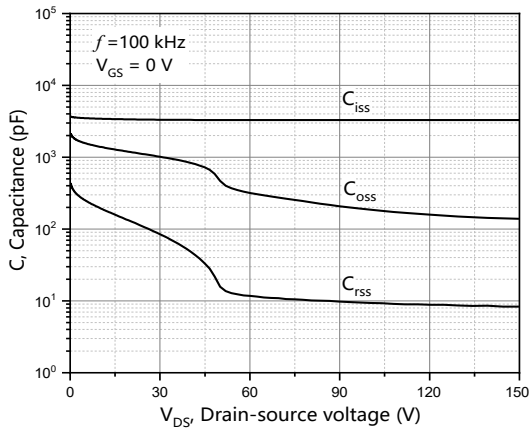
**Typical Characteristics:** ( $T_C=25\text{ }^\circ\text{C}$  unless otherwise noted)



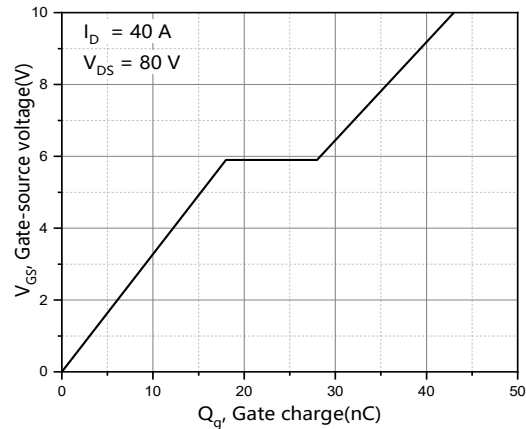
**Figure 1. Typ. output characteristics**



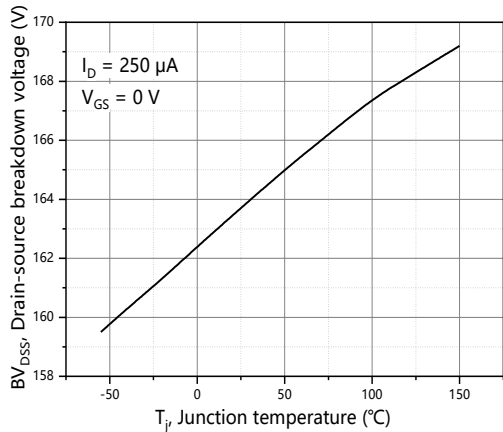
**Figure 2. Typ. transfer characteristics**



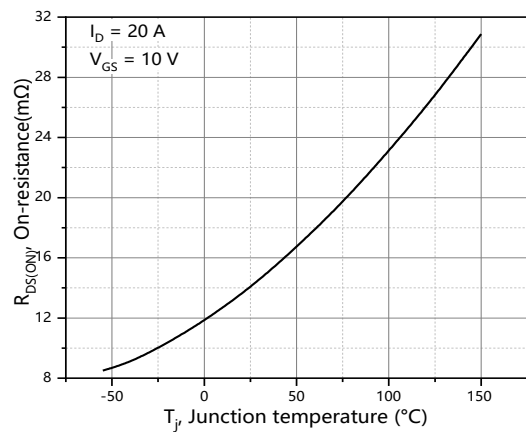
**Figure 3. Typ. capacitances**



**Figure 4. Typ. gate charge**



**Figure 5. Drain-source breakdown voltage**



**Figure 6. Drain-source on-state resistance**

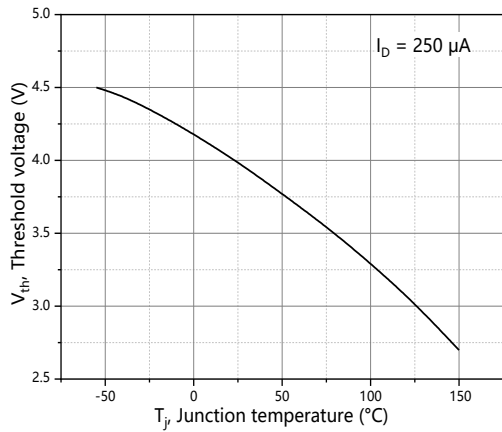


Figure 7. Threshold voltage

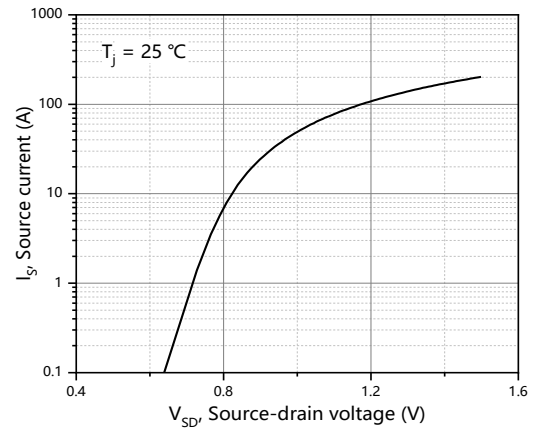


Figure 8. Forward characteristic of body diode

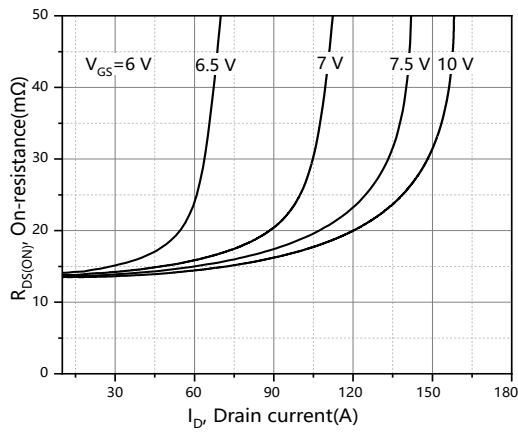


Figure 9. Drain-source on-state resistance

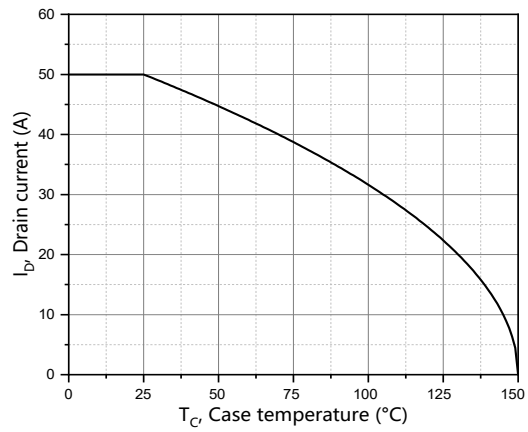


Figure 10. Drain current

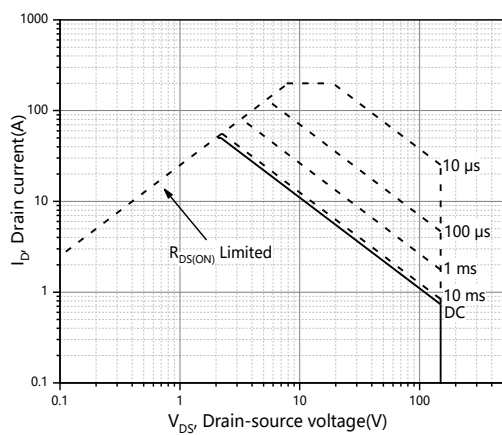


Figure 11. Safe operation area  $T_C=25^\circ\text{C}$

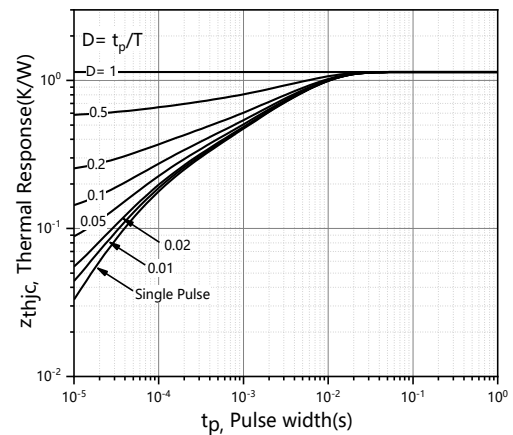


Figure 12. Max. transient thermal impedance



## DFN5x6-8Package Information:

