

1. Product Information

1.1 Features

- Surface-mounted package
- Advanced trench cell design

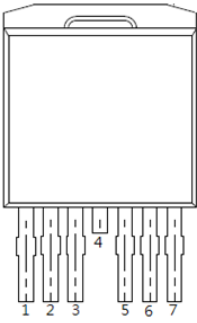
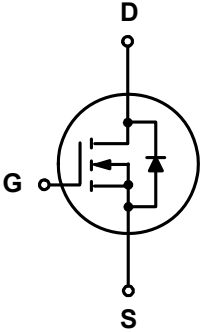
1.2 Applications

- LCD TV appliances
- High power inverter system
- LCDM appliances

1.3 Quick reference

- $BV \geq 80\text{ V}$
- $R_{DS(ON)} \leq 0.76\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- $P_{tot} \leq 250\text{ W}$
- $R_{DS(ON)} \leq 1.21\text{ m}\Omega @ V_{GS} = 6\text{ V}$
- $I_D \leq 300\text{ A}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)	 <p>Top View TO263-7</p>	
2,3	Source (S)		
4	Drain(D)		
5,6,7	Source (S)		

3. Maximum Ratings

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	-	80	V
V_{GS}	Gate-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	-	± 20	V
I_D^*	Drain Current (DC)	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	300	A
		$T_C = 100\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	300	A
I_{DM}^{***}	Drain Current (Pulsed)	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	1200	A
P_{tot}	Drain power dissipation	$T_C = 25\text{ }^\circ\text{C}$	-	250	W
T_{stg}	Storage Temperature		-55	175	$^\circ\text{C}$
T_J	Junction Temperature		-	175	$^\circ\text{C}$
I_S	Continuous-Source Current	$T_C = 25\text{ }^\circ\text{C}$	-	300	A
E_{AS}^*	Single Pulsed Avalanche Energy	$V_{DD} = 50\text{ V}, L = 1.0\text{ mH}$	-	3042	mJ
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	31.3	$^\circ\text{C/W}$
$R_{\theta JC}^*$	Thermal Resistance- Junction to Case		-	0.6	

Notes :

* Surface Mounted on 1 in² pad area, $t \leq 10\text{ sec}$

** Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

*** limited by bonding wire

4. Ordering Information

Device	Package	Packing
AICN007N08	TO263-7	Tape & Reel

5. Electrical Characteristics ($T_A=25^\circ$ Unless Otherwise Noted)

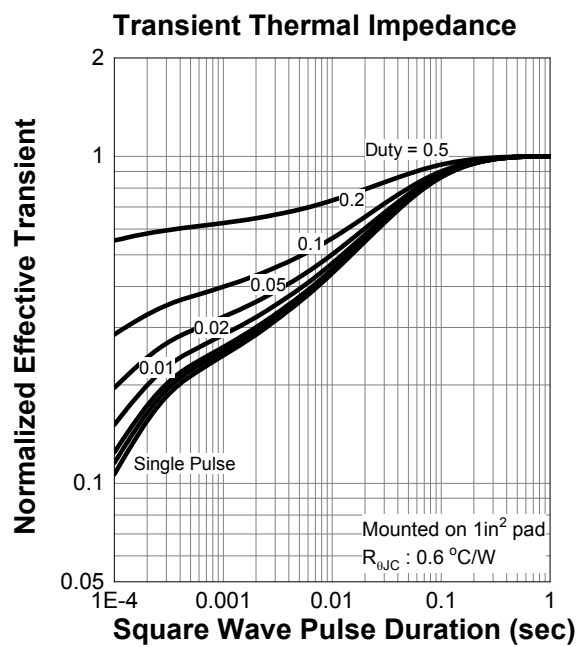
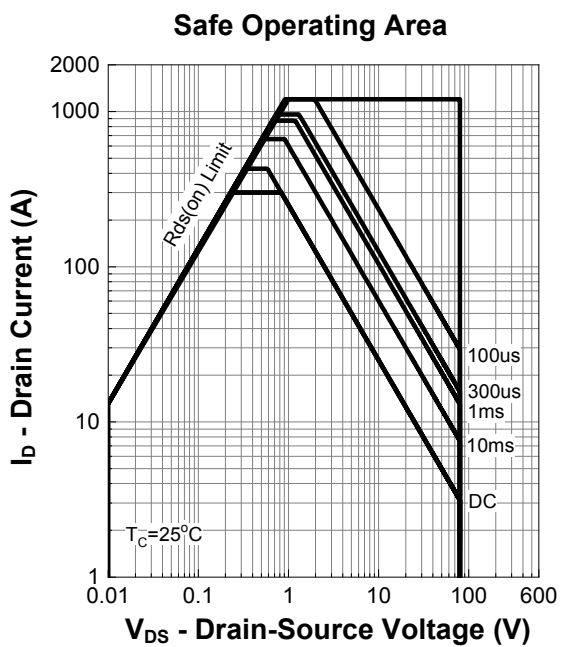
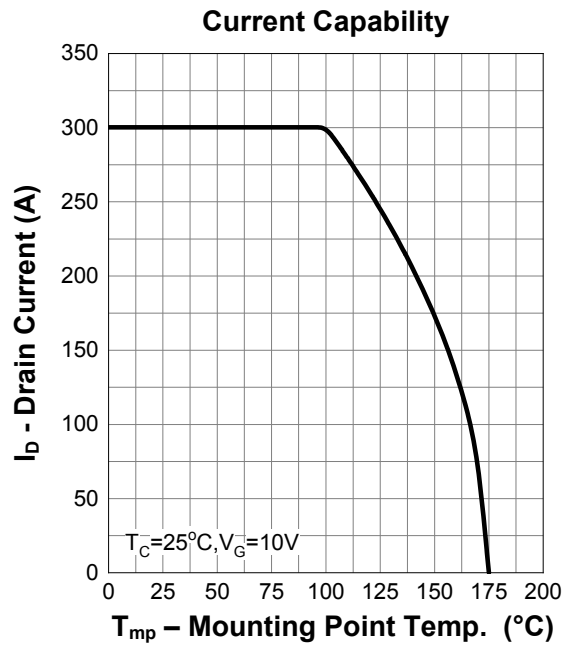
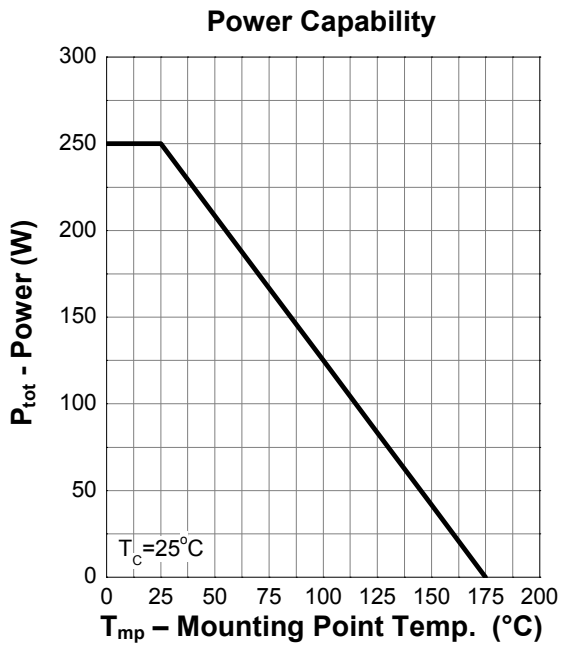
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = 250\ \mu\text{A}$	80	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = 250\ \mu\text{A}$	2	-	4	V
I_{DSS}	Drain Leakage Current	$V_{DS} = 64\text{ V}, V_{GS} = 0\text{ V}$	-	-	1	μA
I_{GSS}	Gate Leakage Current	$V_{GS} = \pm 20\text{ V}, V_{DS} = 0\text{ V}$	-	-	± 100	nA
$R_{DS(ON)}^a$	On-State Resistance	$V_{GS} = 10\text{ V}, I_{DS} = 50\text{ A}$	-	0.63	0.76	m Ω
		$V_{GS} = 6\text{ V}, I_{DS} = 30\text{ A}$	-	0.93	1.21	
Diode Characteristics						
V_{SD}^a	Diode Forward Voltage	$I_{SD} = 50\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.3	V
t_{rr}	Reverse Recovery Time	$I_{DS} = 50\text{ A}, V_{GS} = 0\text{ V}$ $dI_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	127	-	nS
Q_{rr}	Reverse Recovery Charge		-	292	-	nC
Dynamic Characteristics^b						
C_{iss}	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 40\text{ V}$ Frequency = 1 MHz	-	20226	-	pF
C_{oss}	Output Capacitance		-	2673	-	
C_{rss}	Reverse Transfer Capacitance		-	530	-	
$t_d(on)$	Turn-on Delay Time	$V_{DS} = 40\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 3.9\ \Omega, R_L = 0.8\ \Omega,$ $I_{DS} = 50\text{ A}$	-	50	-	nS
t_r	Turn-on Rise Time		-	138	-	
$t_d(off)$	Turn-off Delay Time		-	245	-	
t_f	Turn-off Fall Time		-	145	-	
Gate Charge Characteristics^b						
Q_g	Total Gate Charge	$V_{DS} = 40\text{ V}, V_{GS} = 10\text{ V},$ $I_{DS} = 50\text{ A}$	-	363	-	nC
Q_{gs}	Gate-Source Charge		-	101	-	
Q_{gd}	Gate-Drain Charge		-	91	-	

Notes :

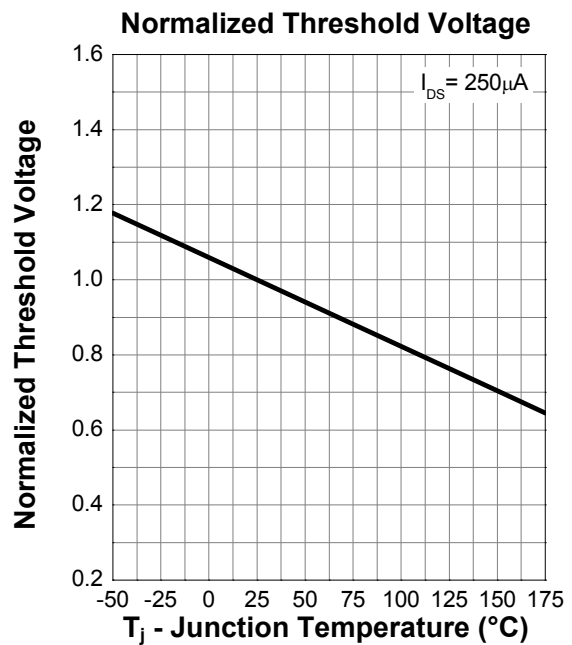
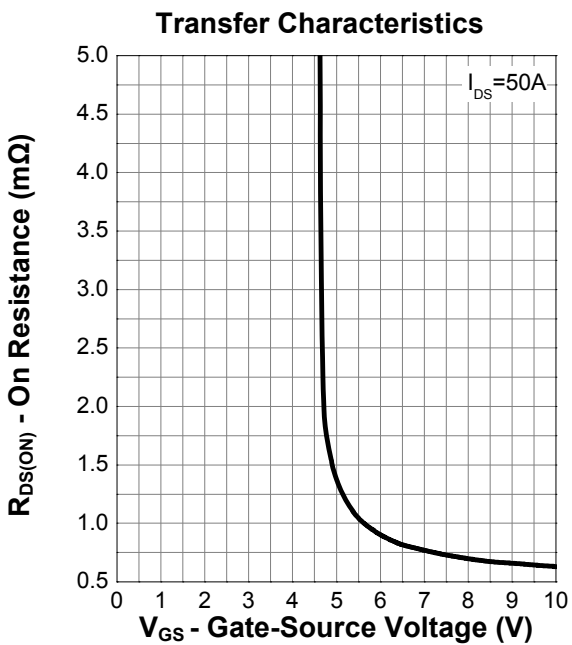
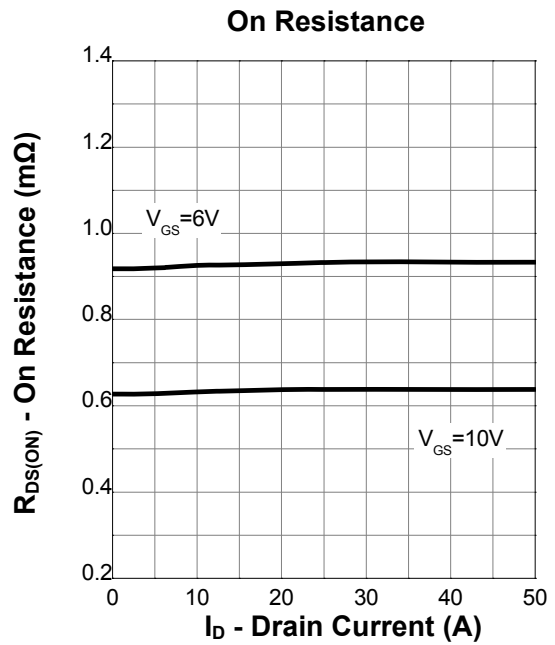
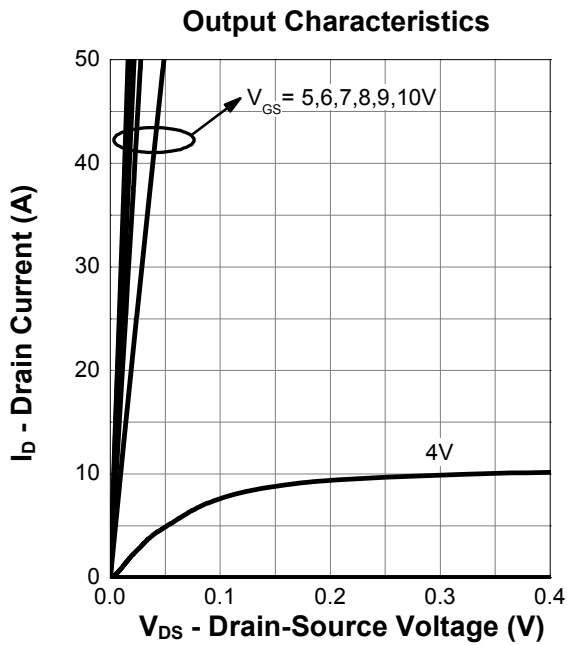
a : Pulse test ; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$

b : Guaranteed by design, not subject to production testing

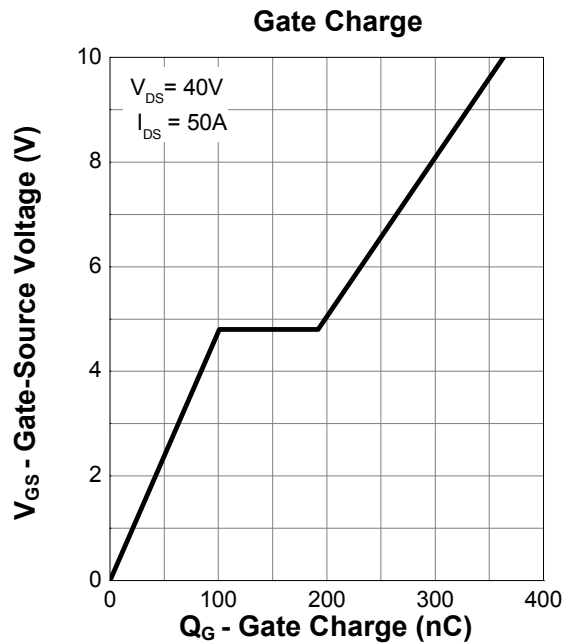
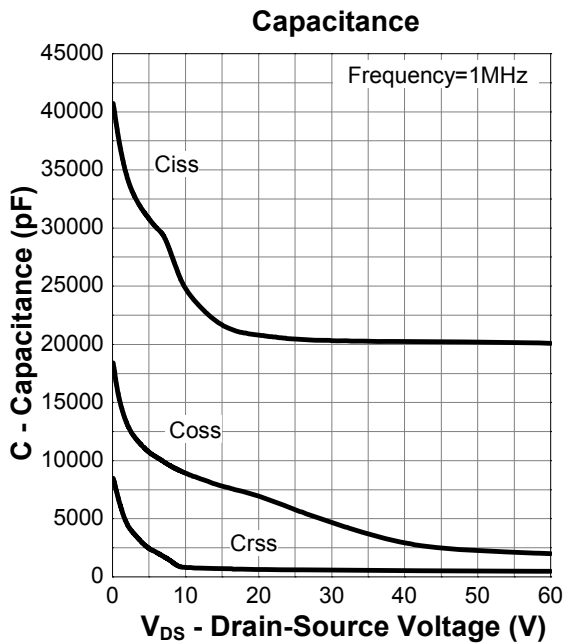
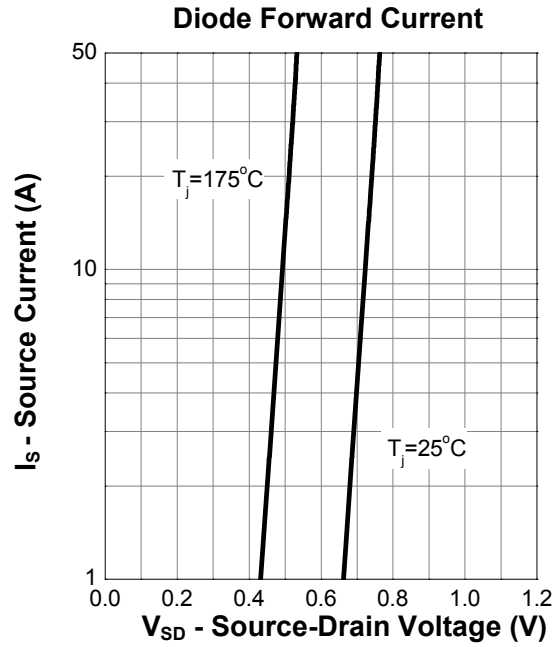
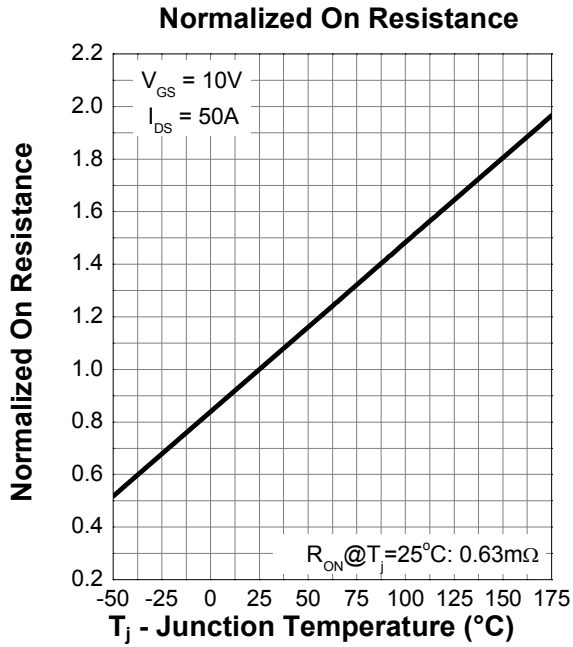
6. Typical Characteristics



6. Typical Characteristics (cont.)

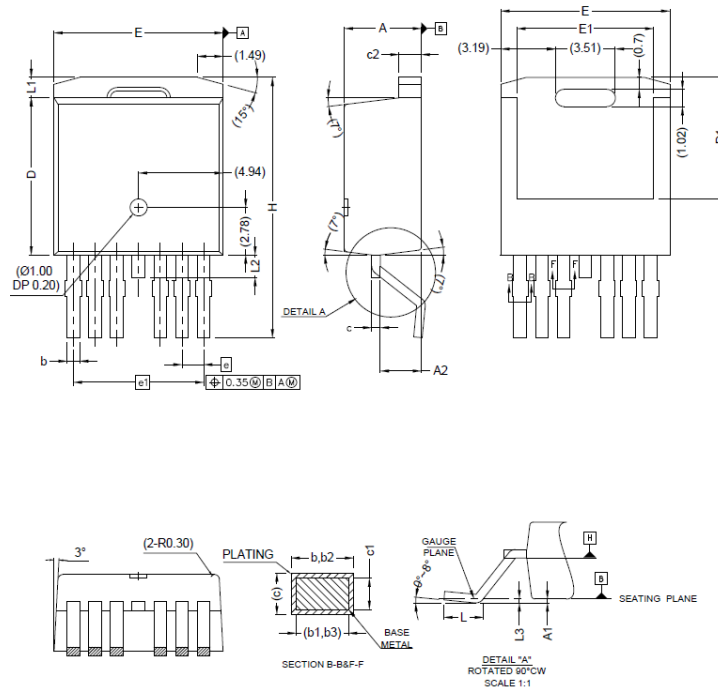


6. Typical Characteristics (cont.)



7. Package Dimensions

TO263-7 Package



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	4.30	4.70
A1	-	0.25
A2	2.20	2.60
b	0.65	0.85
b1	0.65	0.80
b2	0.80	1.00
b3	0.80	0.95
c	0.45	0.60
c1	0.45	0.55
c2	1.25	1.40
D	9.00	9.40
D1	6.86	7.42
E	9.68	10.08
E1	7.70	8.30

e	1.27 BSC	
e1	7.62 BSC	
L	1.78	2.79
L1	-	1.60
L2	-	1.78
L3	0.25BSD	
H	14.61	15.88

Note:

Information provided by AIC is believed to be accurate and reliable. However, we cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in an AIC product; nor for any infringement of patents or other rights of third parties that may result from its use. We reserve the right to change the circuitry and specifications without notice.

Life Support Policy: AIC does not authorize any AIC product for use in life support devices and/or systems. Life support devices or systems are devices or systems which, (i) are intended for surgical implant into the body or (ii) support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.