

N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- Surface-mounted package
- Advanced trench cell design

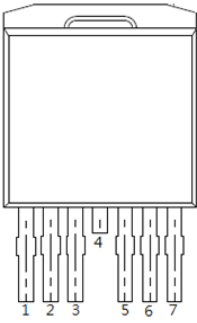
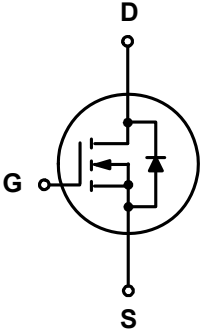
1.2 Applications

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

1.3 Quick reference

- $BV \geq 60\text{ V}$
- $R_{DS(ON)} \leq 0.78\text{ m}\Omega @ V_{GS} = 10\text{ V}$
- $P_{tot} \leq 300\text{ W}$
- $R_{DS(ON)} \leq 1.3\text{ m}\Omega @ V_{GS} = 6\text{ V}$
- $I_D \leq 350\text{ A}$

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	$T_C = 25\text{ }^\circ\text{C}$	-	60	V
V_{GS}	Gate-Source Voltage	$T_C = 25\text{ }^\circ\text{C}$	-	± 20	V
I_D^*	Drain Current (DC)	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	350	A
I_{DM}^{***}	Drain Current (Pulsed)	$T_C = 25\text{ }^\circ\text{C}, V_{GS} = 10\text{ V}$	-	700	A
P_{tot}	Drain power dissipation	$T_C = 25\text{ }^\circ\text{C}$	-	300	W
T_{stg}	Storage Temperature		-55	175	$^\circ\text{C}$
T_J	Junction Temperature		-	175	$^\circ\text{C}$
I_S	Continuous-Source Current	$T_C = 25\text{ }^\circ\text{C}$	-	350	A
E_{AS}^*	Single Pulsed Avalanche Energy	$V_{DD} = 50\text{ V}, L = 1.0\text{ mH}$	-	2964	mJ
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	30.7	$^\circ\text{C/W}$
$R_{\theta JC}^*$	Thermal Resistance- Junction to Case		-	0.5	

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
AICN006N06	TO263-7	Tape & Reel

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

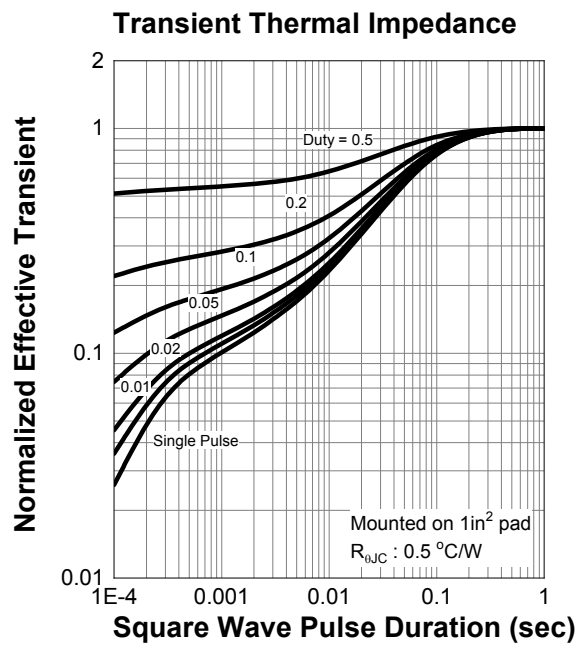
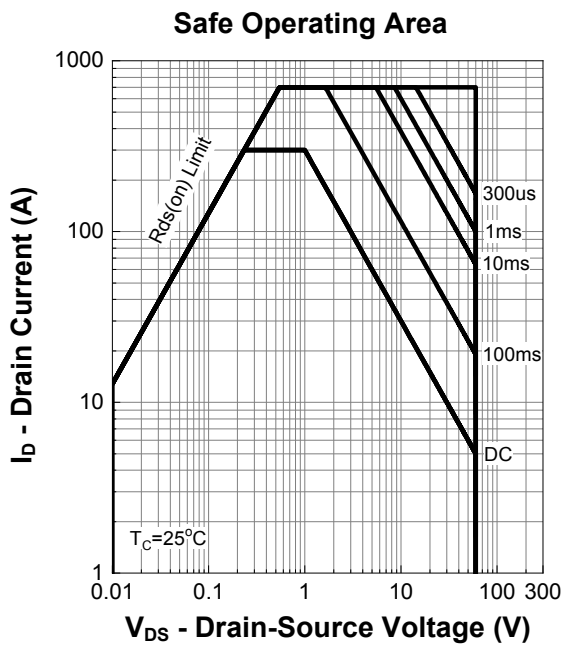
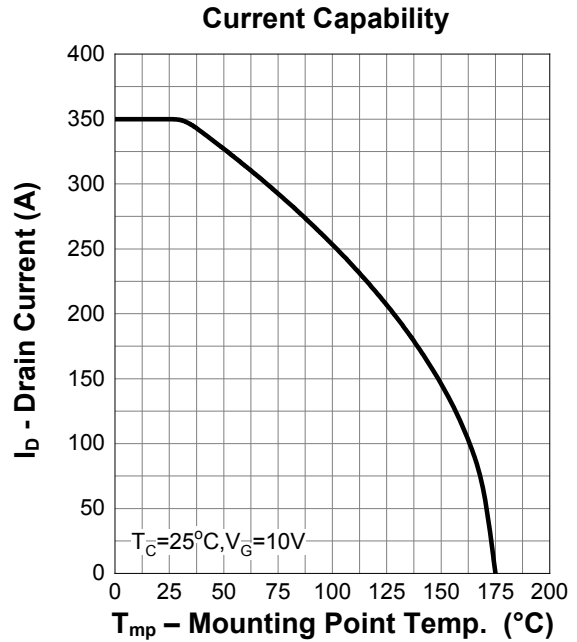
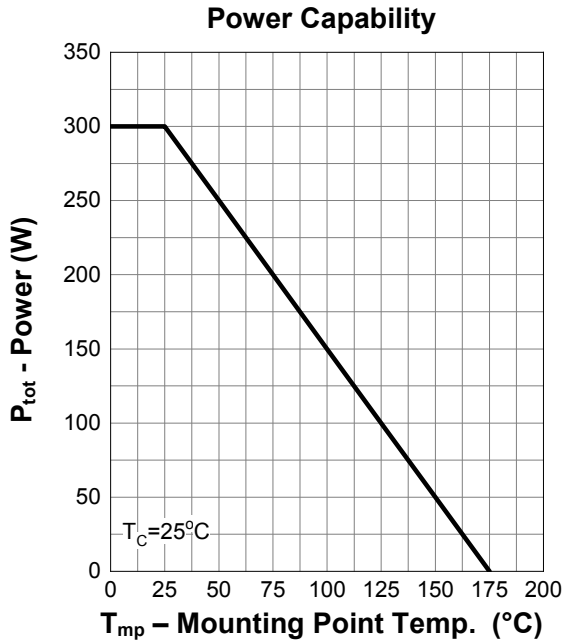
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = 250\ \mu\text{A}$	60	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_{DS} = 250\ \mu\text{A}$	2	-	4	V
I_{DSS}	Drain Leakage Current	$V_{DS} = 48\text{ V}, V_{GS} = 0\text{ V}$	-	-	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	$V_{GS} = 10\text{ V}, I_{DS} = 20\text{ A}$	-	0.65	0.78	m Ω
		$V_{GS} = 6\text{ V}, I_{DS} = 10\text{ A}$	-	1.0	1.3	
Diode Characteristics						
V_{SD}^a	Diode Forward Voltage	$I_{SD} = 20\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.3	V
t_{rr}	Reverse Recovery Time	$I_{DS} = 20\text{ A}, V_{GS} = 0\text{ V}$ $di_{SD}/dt = 100\text{ A}/\mu\text{s}$	-	119	-	nS
Q_{rr}	Reverse Recovery Charge		-	392	-	nC
Dynamic Characteristics^b						
C_{iss}	Input Capacitance	$V_{GS} = 0\text{ V}, V_{DS} = 30\text{ V}$ Frequency = 1 MHz	-	16562	-	pF
C_{oss}	Output Capacitance		-	5512	-	
C_{rss}	Reverse Transfer Capacitance		-	334	-	
$t_{d(on)}$	Turn-on Delay Time	$V_{DS} = 30\text{ V}, V_{GEN} = 10\text{ V},$ $R_G = 3.9\ \Omega, R_L = 1.5\ \Omega,$ $I_{DS} = 20\text{ A}$	-	42	-	nS
t_r	Turn-on Rise Time		-	74	-	
$t_{d(off)}$	Turn-off Delay Time		-	158	-	
t_f	Turn-off Fall Time		-	87	-	
Gate Charge Characteristics^b						
Q_g	Total Gate Charge	$V_{DS} = 30\text{ V}, V_{GS} = 10\text{ V},$ $I_{DS} = 20\text{ A}$	-	254	-	nC
Q_{gs}	Gate-Source Charge		-	85.5	-	
Q_{gd}	Gate-Drain Charge		-	46.5	-	

Notes :

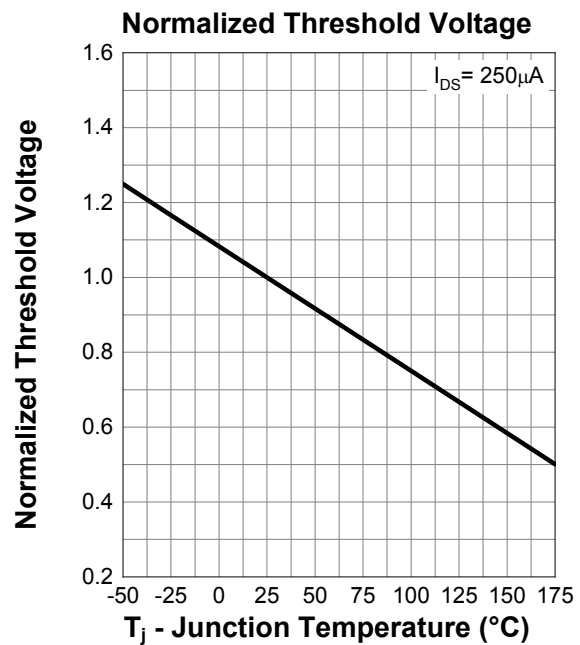
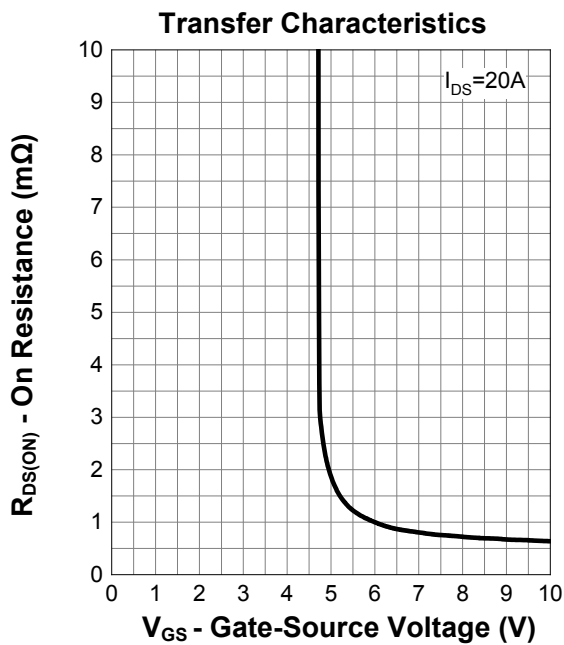
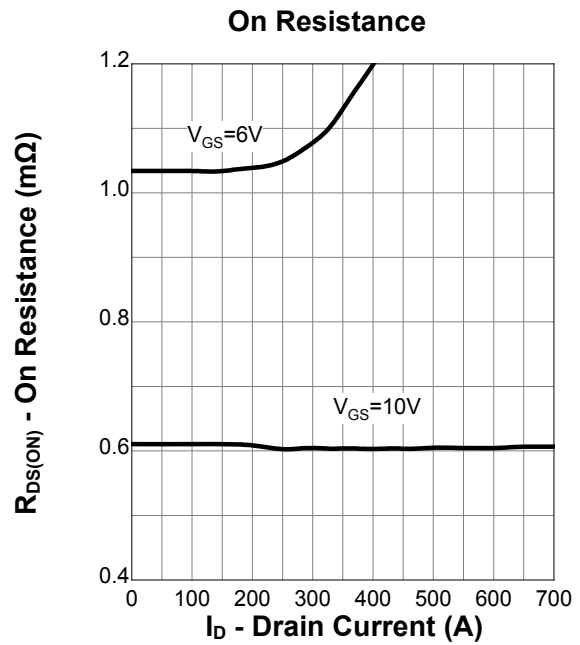
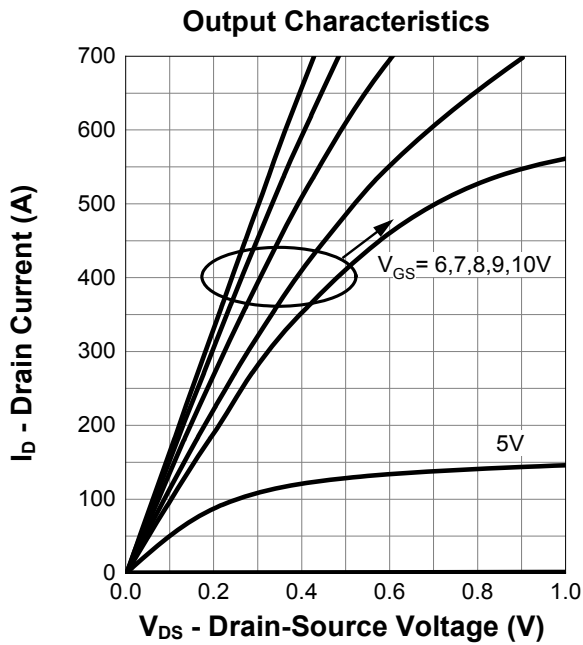
 a : Pulse test ; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$

b : Guaranteed by design, not subject to production testing

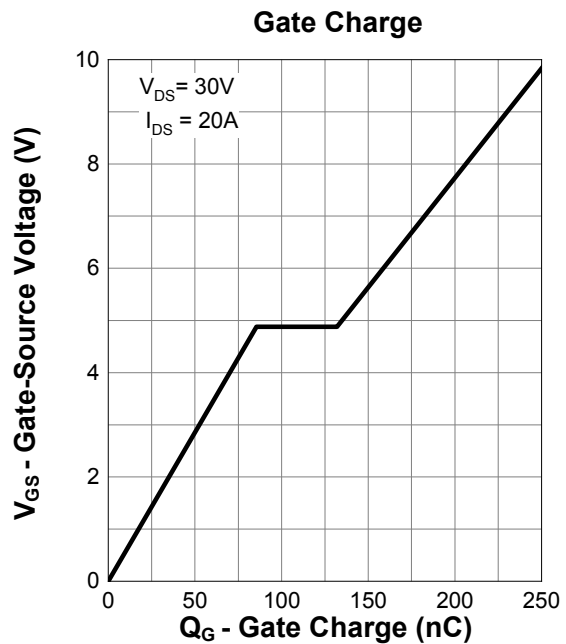
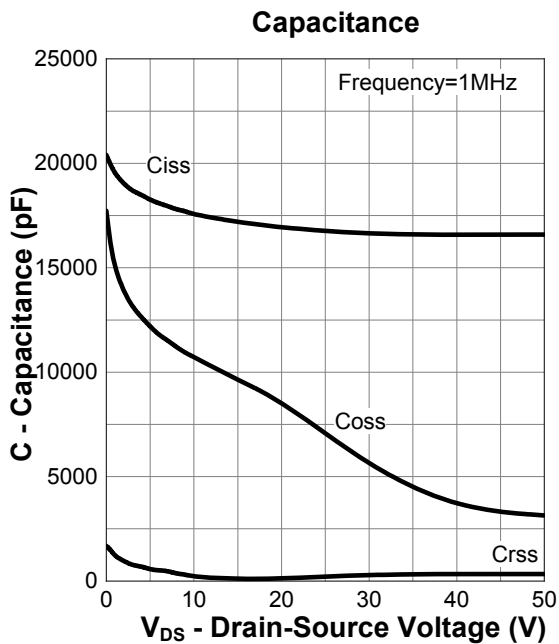
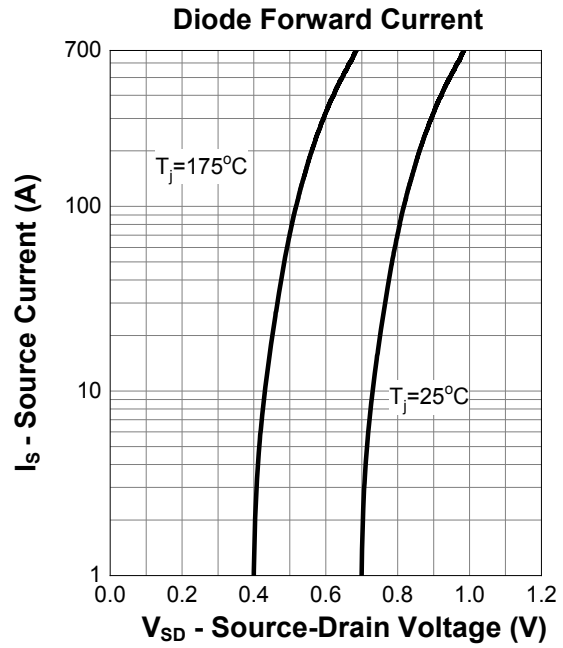
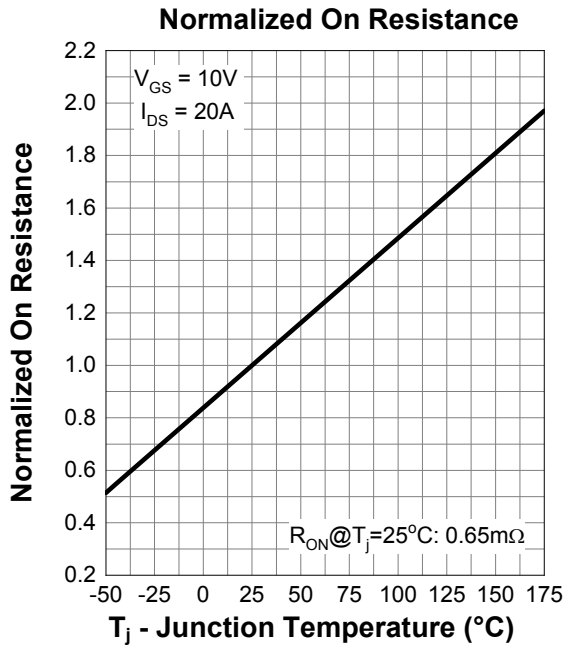
6. Typical Characteristics



6. Typical Characteristics (cont.)

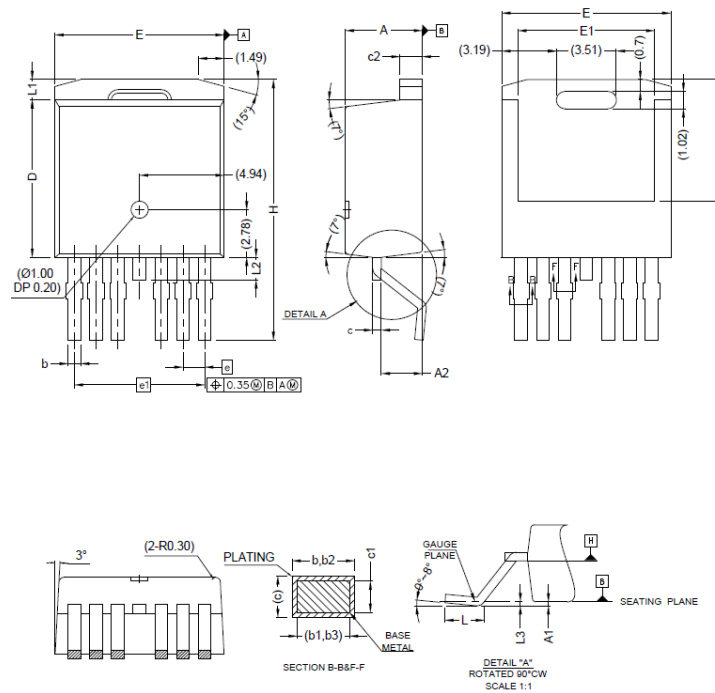


6. Typical Characteristics (cont.)



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:

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