

N-Channel Enhancement Mode MOSFET

Features

Surface-mounted package
Advanced trench cell design

Applications

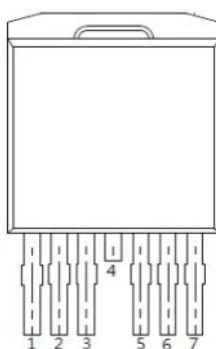
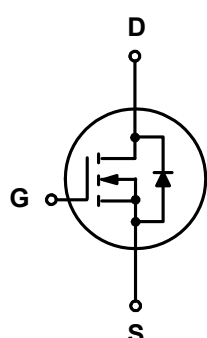
LCD TV appliances
LCDM appliances
High power inverter system

Quick reference

$BV \geq 120 \text{ V}$
 $P_{\text{tot}} \leq 375 \text{ W}$
 $I_D \leq 211 \text{ A}$

$R_{\text{DS(ON)}} \leq 3.2 \text{ m}\Omega @ V_{\text{GS}} = 10 \text{ V}$
 $R_{\text{DS(ON)}} \leq 3.9 \text{ m}\Omega @ V_{\text{GS}} = 6 \text{ V}$

Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)		
2,3	Source(S)		
4	Drain(D)		
5,6,7	Source(S)		

Top View

TO-263-7L
(D2PAK)

Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_C = 25\text{ }^{\circ}\text{C}$	-	120	V
V_{GS}	Gate-Source Voltage	$T_C = 25\text{ }^{\circ}\text{C}$	-	± 20	V
I_D^*	Drain Current (DC)	$T_C = 25\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$	-	211	A
		$T_C = 100\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$	-	149	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	$T_C = 25\text{ }^{\circ}\text{C}$	-	375	W
T_{stg}	Storage Temperature		- 55	175	$^{\circ}\text{C}$
T_J	Junction Temperature		-	175	$^{\circ}\text{C}$
I_S	Continuous-Source Current	$T_C = 25\text{ }^{\circ}\text{C}$	-	211	A
E_{AS}^*	Single Pulsed Avalanche Energy	$V_{DD} = 50\text{ V}, L = 1.0\text{ mH}$	-	1800	mJ
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	40	$^{\circ}\text{C/W}$
$R_{\theta JC}^*$	Thermal Resistance- Junction to Case		-	0.4	

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

Ordering Code

Product Name	Package	Reel Size	Tape width	Quantity	Note
CI036N12	TO-263-7L			2000	

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

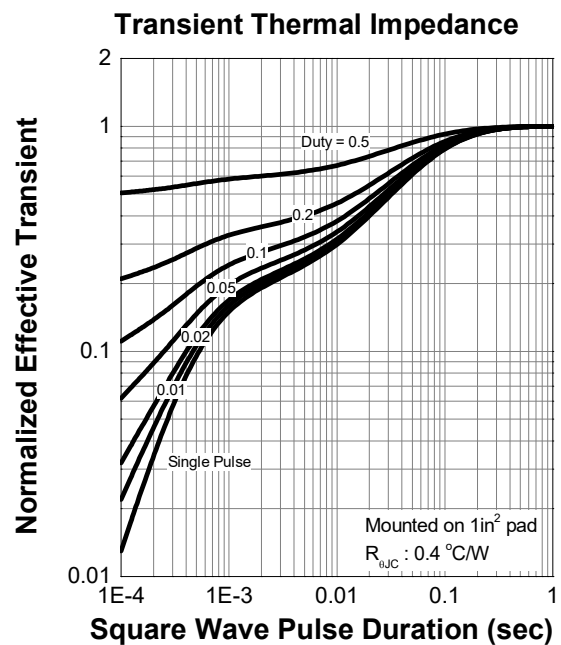
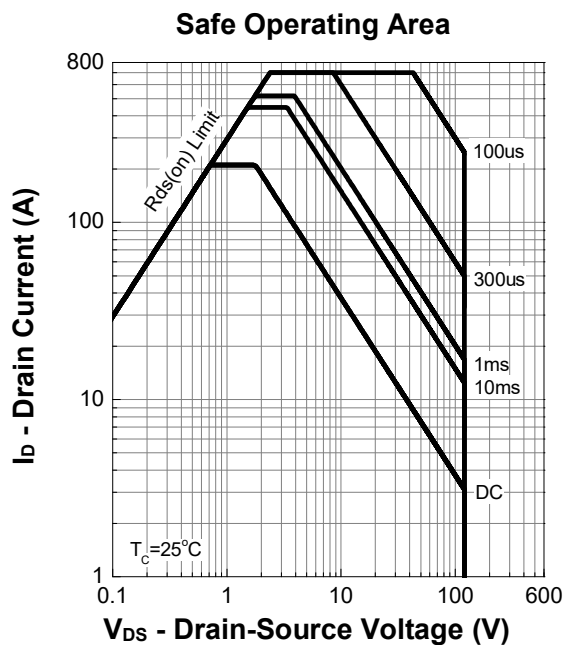
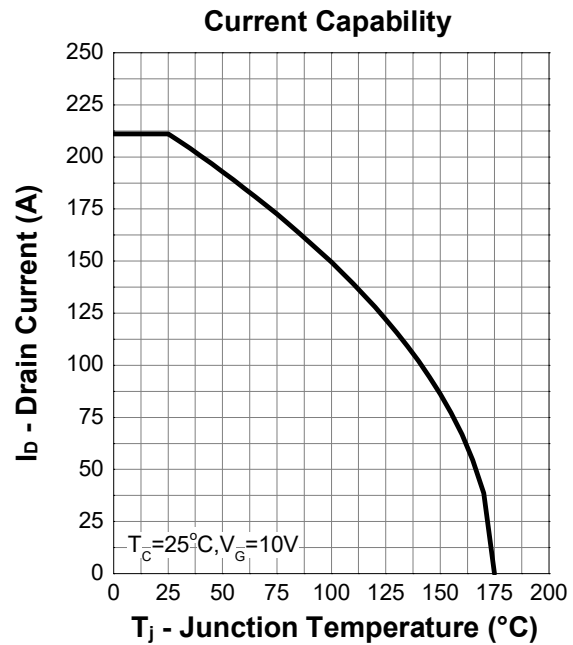
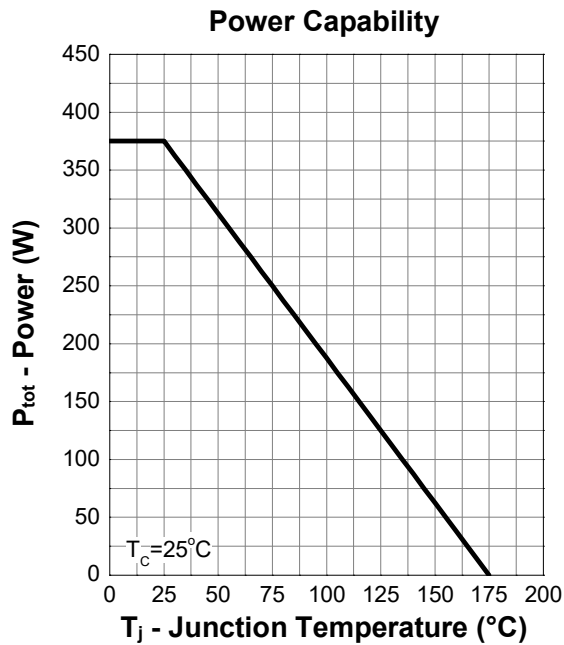
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _{DS} = 250 μA	120	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = 250 μA	2	-	4	V
I _{DSS}	Drain Leakage Current	V _{DS} = 96 V, V _{GS} = 0 V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{GS} = ± 20 V, V _{DS} = 0 V	-	-	± 100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} = 10 V, I _{DS} = 50 A	-	2.8	3.2	m Ω
		V _{GS} = 6 V, I _{DS} = 30 A	-	3.4	3.9	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} = 50 A, V _{GS} = 0 V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _{DS} = 50 A, V _{GS} = 0 V dI _{SD} /dt = 100 A/μs	-	124	-	nS
Q _{rr}	Reverse Recovery Charge		-	368	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} = 0 V, V _{DS} = 60 V Frequency = 1 MHz	-	9116	-	pF
C _{oss}	Output Capacitance		-	1041	-	
C _{rss}	Reverse Transfer Capacitance		-	69	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} = 60 V, V _{GEN} = 10 V, R _G = 3.9 Ω, R _L = 1.2 Ω, I _{DS} = 50 A	-	26	-	nS
t _r	Turn-on Rise Time		-	87	-	
t _{d(off)}	Turn-off Delay Time		-	105	-	
t _f	Turn-off Fall Time		-	87	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} = 60 V, V _{GS} = 10 V, I _{DS} = 50 A	-	157	-	nC
Q _{gs}	Gate-Source Charge		-	47	-	
Q _{gd}	Gate-Drain Charge		-	37	-	

Notes :

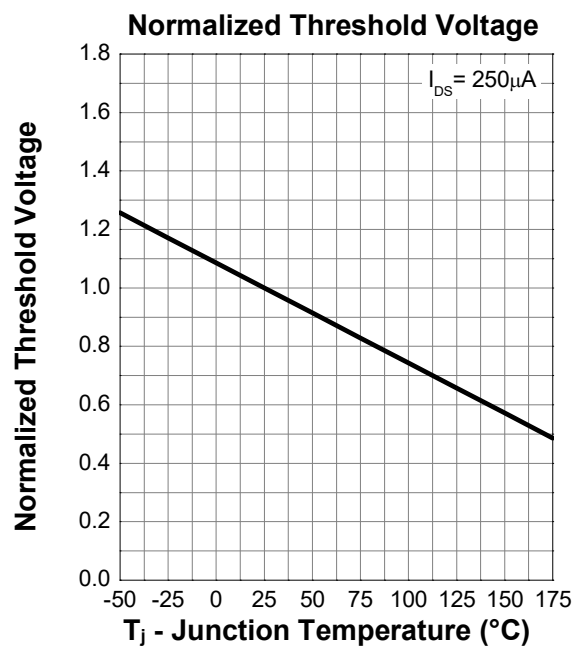
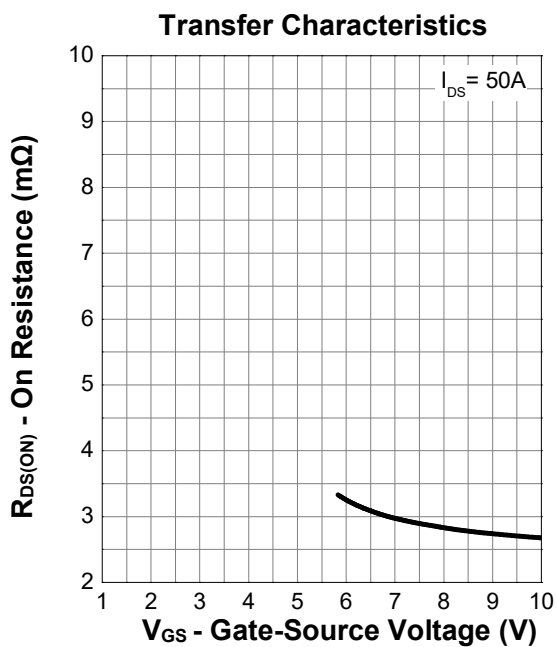
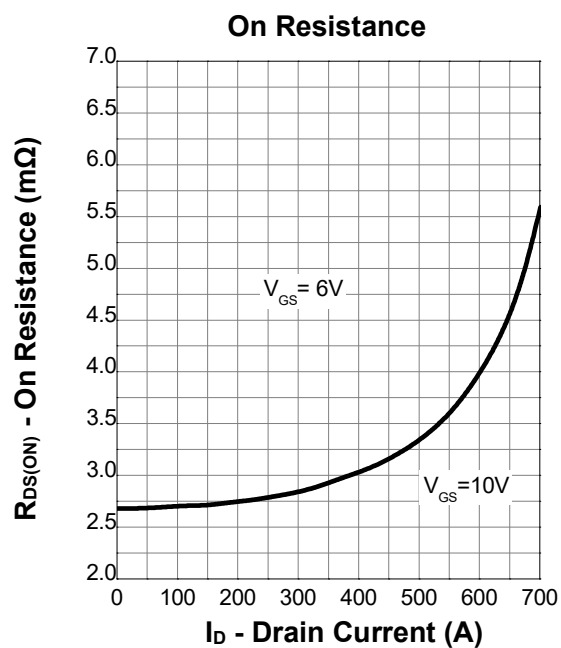
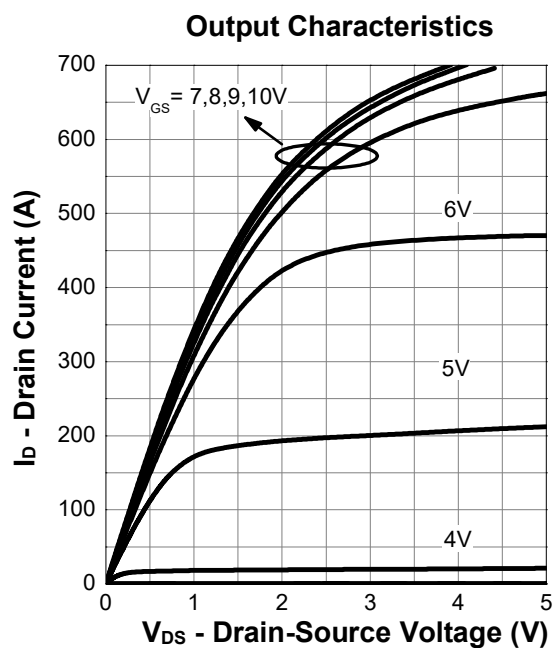
a : Pulse test ; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

b : Guaranteed by design, not subject to production testing

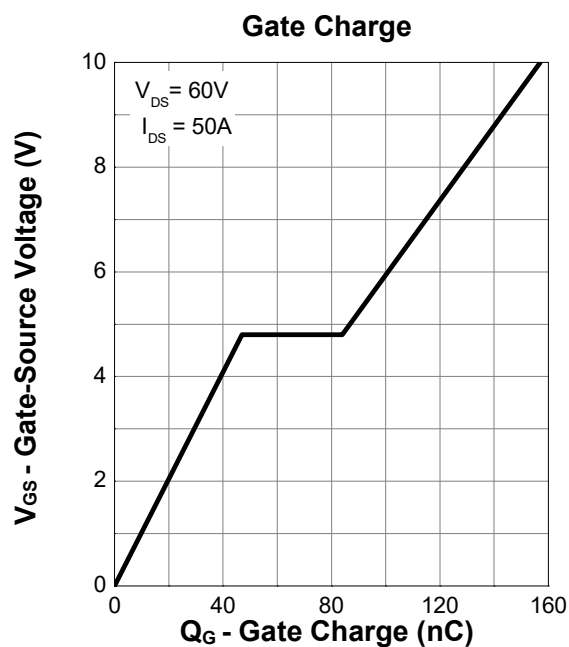
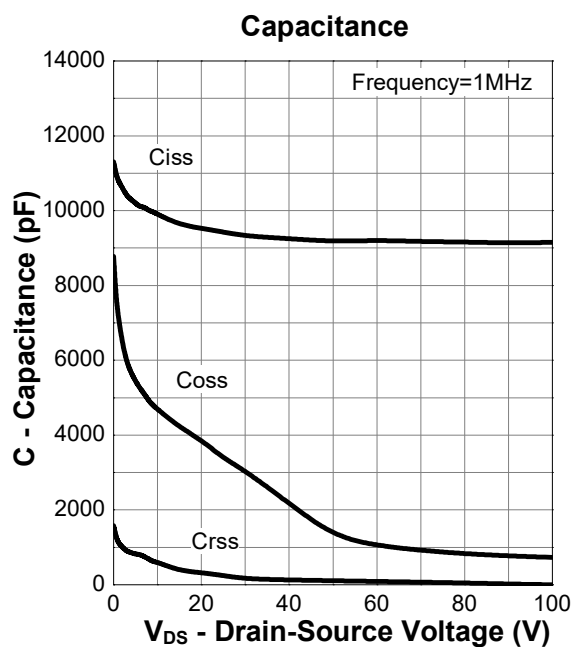
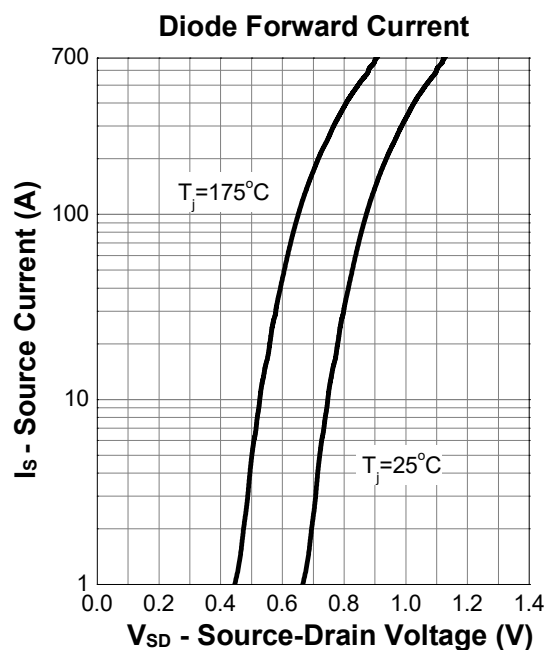
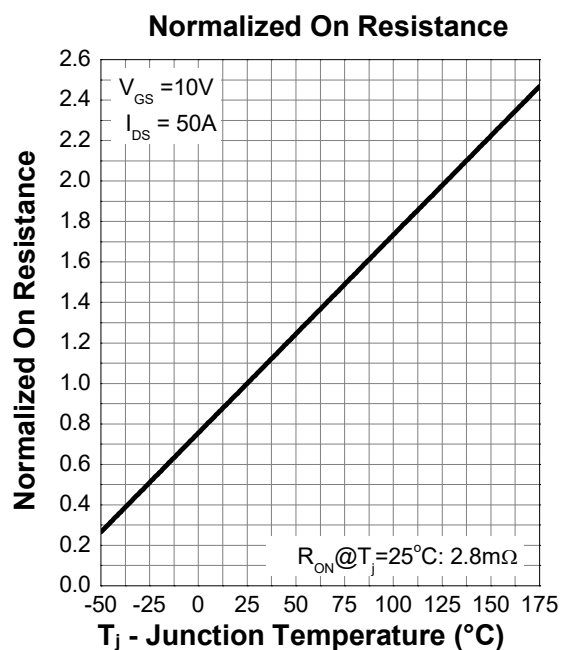
Typical Characteristics



Typical Characteristics (cont.)

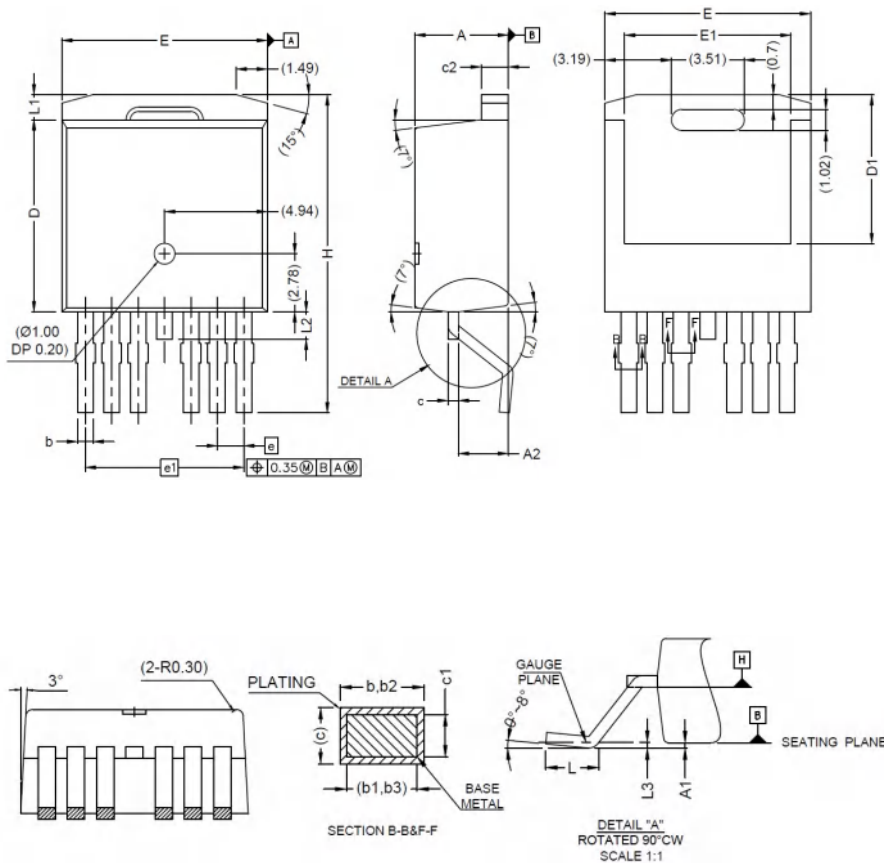


Typical Characteristics (cont.)



Package Dimensions

TO-263-7L 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	0.25 BSD	
H	14.61	15.88