Features

- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)
- HBM ESD protection level pass 8KV

Note : The diode connected between the gate and source serves only as protection against ESD. No gate overvoltage rating is implied.

Applications

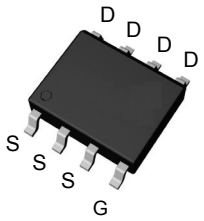
- Power Management in LCD TV Inverter.

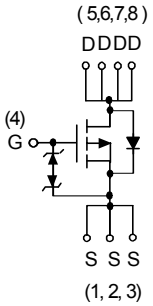
Product Summery

-40V/-16.7A,

$R_{DS(ON)}$=8.5mΩ (max.) @ V_{GS} =-20V
$R_{DS(ON)}$=10mΩ (max.) @ V_{GS} =-10V
$R_{DS(ON)}$=16mΩ (max.) @ V_{GS}=-4.5V

SOP-8 Pin Configuration





Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
V_{DSS}	Drain-Source Voltage		-40	V
V_{GSS}	Gate-Source Voltage		±25	
I_D [a]	Continuous Drain Current (V_{GS}=-10V)	T_A=25°C	-16.7	A
		T_A=70°C	-13.3	
I_{DM} [a]	Pulsed Drain Current (V_{GS}=-10V)		-66	
I_S [a]	Diode Continuous Forward Current		-4	
I_{AS} [b]	Avalanche Current, Single pulse	L=0.1mH	-43	
		L=0.5mH	-24	
E_{AS} [b]	Avalanche Energy, Single pulse	L=0.1mH	92	mJ
		L=0.5mH	144	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	
P_D [a]	Maximum Power Dissipation	T_A=25°C	4.2	W
		T_A=70°C	2.7	
$R_{\theta JA}$ [a]	Thermal Resistance-Junction to Ambient	t ≤ 10s	30	°C/W
		Steady State	75	
$R_{\theta JL}$ [c]	Thermal Resistance-Junction to Lead	Steady State	24	

Note a：Surface Mounted on 1in^2 pad area, t ≤ 10sec.
Note b：UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T_j=25°C).
Note c：The power dissipation P_D is based on $T_{J(MAX)}$ = 150°C, and it is useful for reducing junction-to-case thermal resistance ($R_{\theta JC}$) when additional heat sink is used.

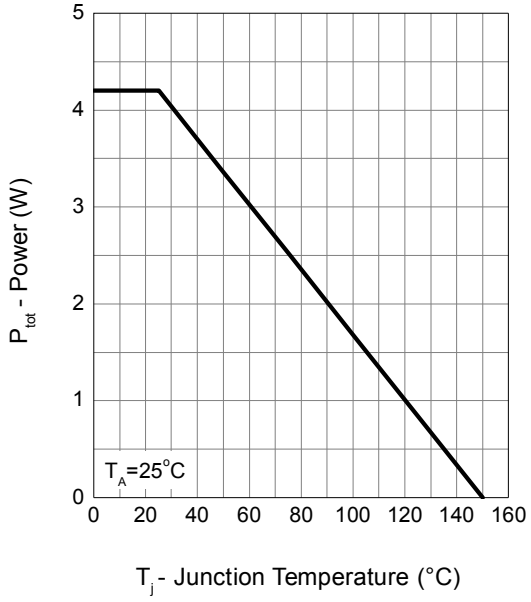
Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250μA	-40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-32V, V_{GS}=0V	-	-	-1	μA
		T_J=85°C	-	-	-30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250μA	-1.5	-2	-2.5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±10	μA
$R_{DS(ON)}$ [d]	Drain-Source On-state Resistance	V_{GS}=-20V, I_{DS}=-16A	-	7	8.5	mΩ
		V_{GS}=-10V, I_{DS}=-16A	-	7.9	10	
		V_{GS}=-4.5V, I_{DS}=-10A	-	11.5	16	
Diode Characteristics						
V_{SD} [d]	Diode Forward Voltage	I_{SD}=-1A, V_{GS}=0V	-	-0.75	-1	V
t_{rr}	Reverse Recovery Time	I_{SD}=-16A, dI_{SD}/dt=100A/μs	-	26	-	ns
Q_{rr}	Reverse Recovery Charge		-	19	-	nC
Dynamic Characteristics [e]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	3.2	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-20V, Frequency=1.0MHz	-	2764	-	pF
C_{oss}	Output Capacitance		-	417	-	
C_{rss}	Reverse Transfer Capacitance		-	325	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=-20V, R_L=20Ω, I_{DS}=-1A, V_{GEN}=-10V, R_G=6Ω	-	15	-	ns
t_r	Turn-on Rise Time		-	12	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	56	-	
t_f	Turn-off Fall Time		-	21	-	
Gate Charge Characteristics [e]						
Q_g	Total Gate Charge	V_{DS}=-20V, V_{GS}=-10V, I_{DS}=-16A	-	60	-	nC
Q_{gs}	Gate-Source Charge		-	7.6	-	
Q_{gd}	Gate-Drain Charge		-	15	-	

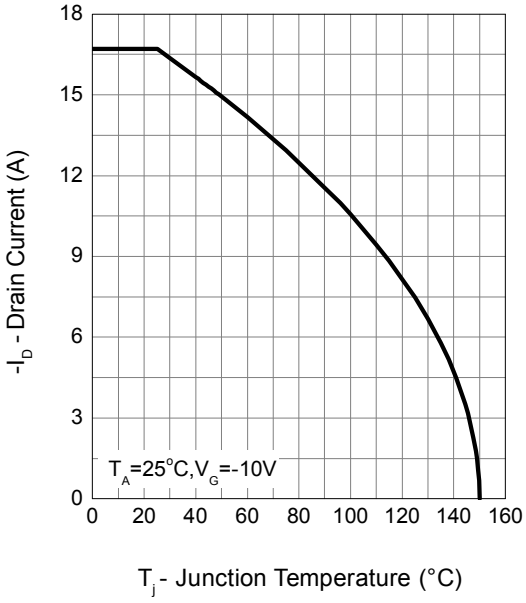
Note d：Pulse test; pulse width≤300μs, duty cycle≤2%.
Note e：Guaranteed by design, not subject to production testing.

Typical Characteristics

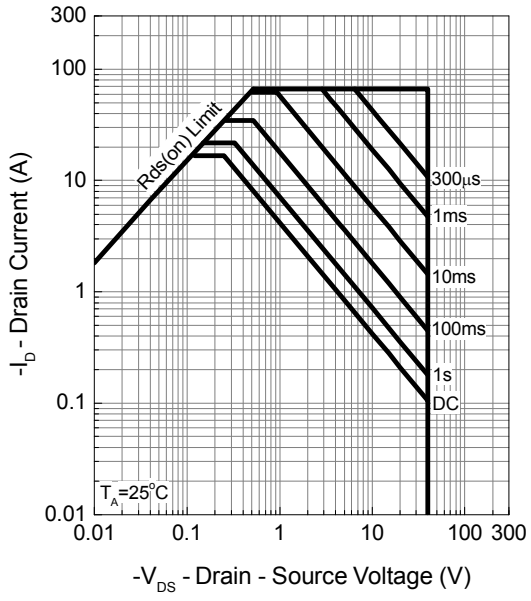
Power Dissipation



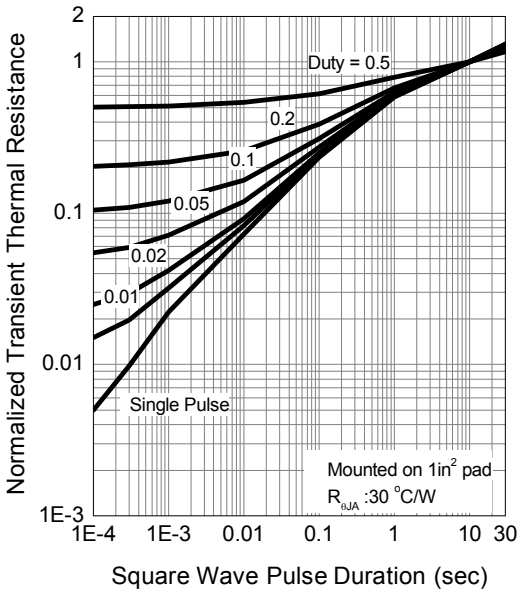
Drain Current



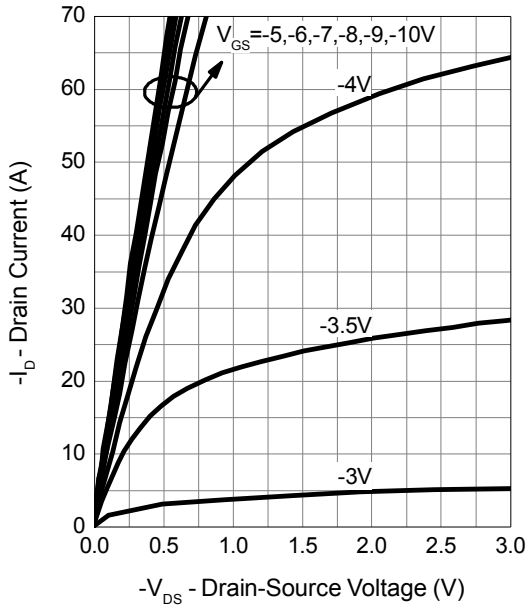
Safe Operation Area



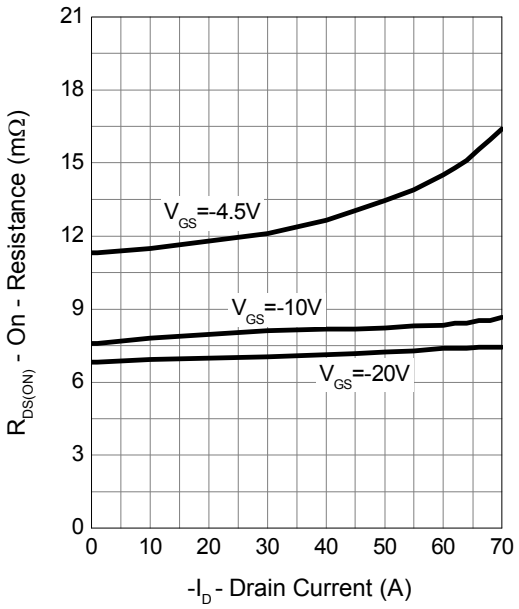
Thermal Transient Impedance



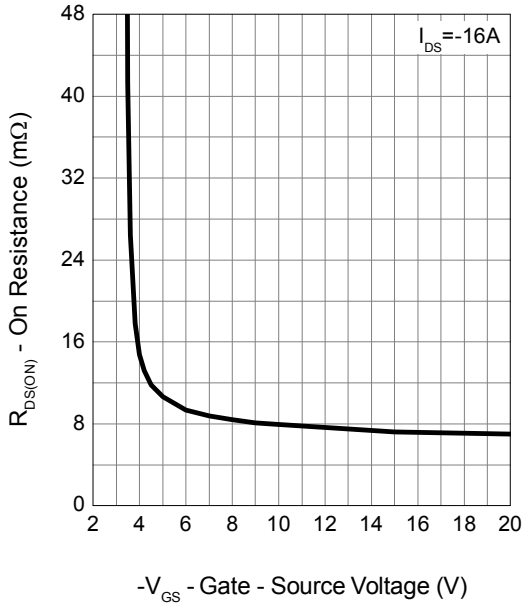
Output Characteristics



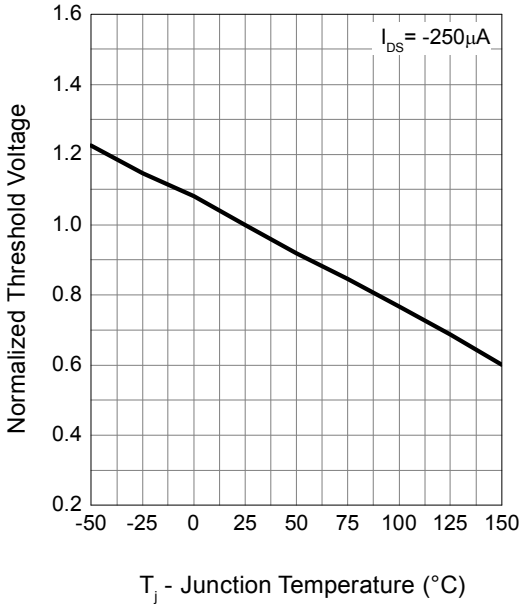
Drain-Source On Resistance



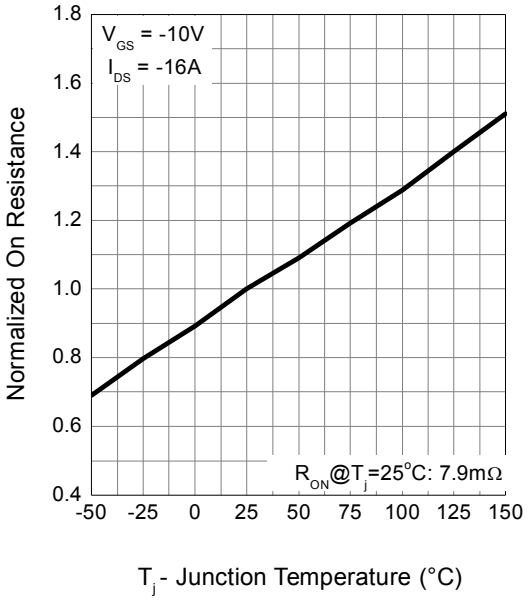
Gate-Source On Resistance



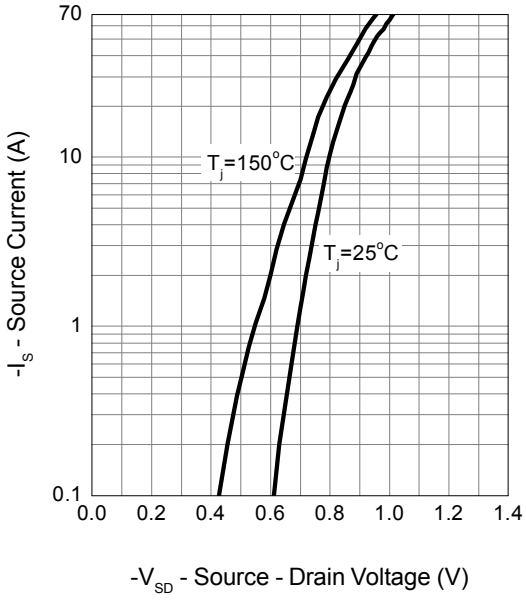
Gate Threshold Voltage



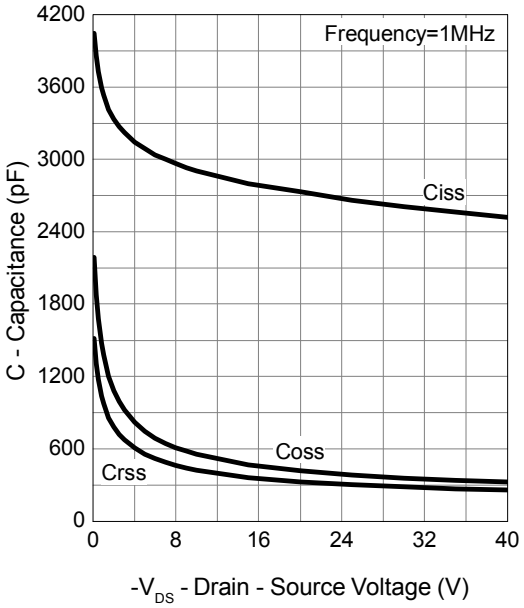
Drain-Source On Resistance



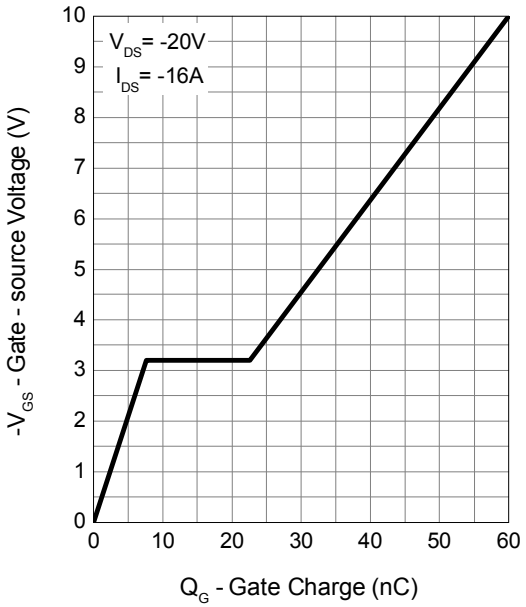
Source-Drain Diode Forward



Capacitance



Gate Charge



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