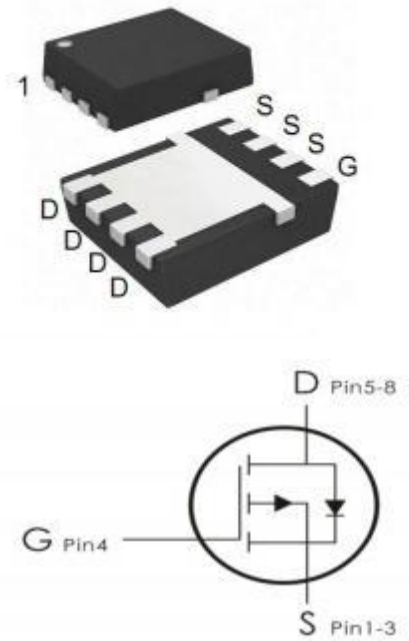


Description:

This P-Channel MOSFET uses advanced trench 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) $V_{DS}=-30V, I_D=-105A, R_{DS(on)}<5.5m\ \Omega$ @ $V_{GS}=-10V$
- 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.



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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^\circ\text{C}$	-105	A
	Continuous Drain Current- $T_C=70^\circ\text{C}$	-84	
E_{AS}	Single Pulse Avalanche Energy	135	mJ
P_D	Power Dissipation ²	96	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.3	$^\circ\text{C/W}$

Package Marking and Ordering Information:

Part NO.	Marking	Package
SI7149ADP-T1-GE3	SI7149ADP	DFN5*6-8

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Sourctce Breakdown Voltage	V _{GS} =0V,I _D =-250 μ A	-30	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =-30V	---	---	-1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0A	---	---	±100	nA
On Characteristics ³						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =-250 μ A	-1	-1.5	-2.5	V
R _{DS(ON)}	Drain-Source On Resistance ³	V _{GS} =-10V,I _D =-20A	---	4.4	5.5	m Ω
		V _{GS} =4.5V,I _D =15A	---	6	8	
Dynamic Characteristics ⁴						
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	1968	---	pF
C _{OSS}	Output Capacitance		---	723	---	
C _{rss}	Reverse Transfer Capacitance		---	160	---	
Switching Characteristics ⁴						
t _{d(on)}	Turn-On Delay Time	V _{DD} =-15V,I _D =-3A,R _G =6Ω	---	12	---	ns
t _r	Rise Time		---	16.4	---	ns
t _{d(off)}	Turn-Off Delay Time		V _{GS} =-10V	---	90	---
t _f	Fall Time		---	65	---	ns
Q _g	Total Gate Charge	V _{GS} =-10V, V _{DS} =-15, I _D =-30A	---	183	---	nC
Q _{gs}	Gate-Source Charge		---	14.6	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	36	---	nC
Drain-Source Diode Characteristics						
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V _{SD}	Source-Drain Diode Forward Voltage ³	V _{GS} =0V,I _S =-30A	---	-0.84	-1.2	V

Notes:

- ① Pulse width limited by maximum allowable junction temperature
- ② Limited by T_{Jmax} , starting $T_J = 25^{\circ}C$, $L = 0.3mH$, $R_G = 25\Omega$, $I_{AS} = 30A$, $V_{GS} = 10V$. Part not recommended for use above this value
- ③ Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$.

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

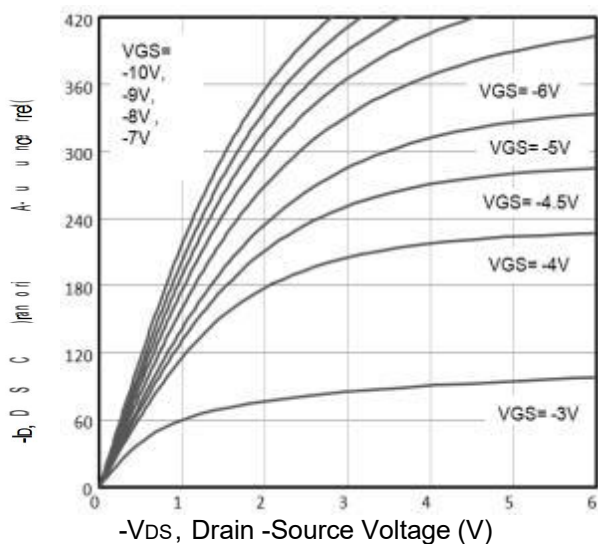


Fig1. Typical Output Characteristics

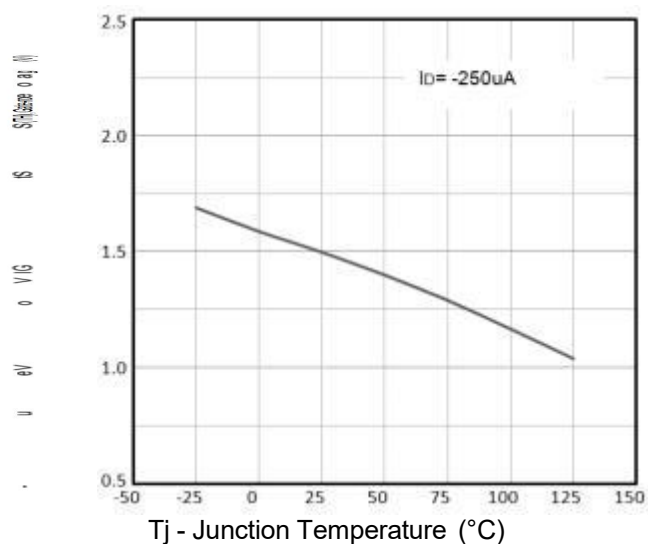


Fig2. Normalized Threshold Voltage Vs. Temperature

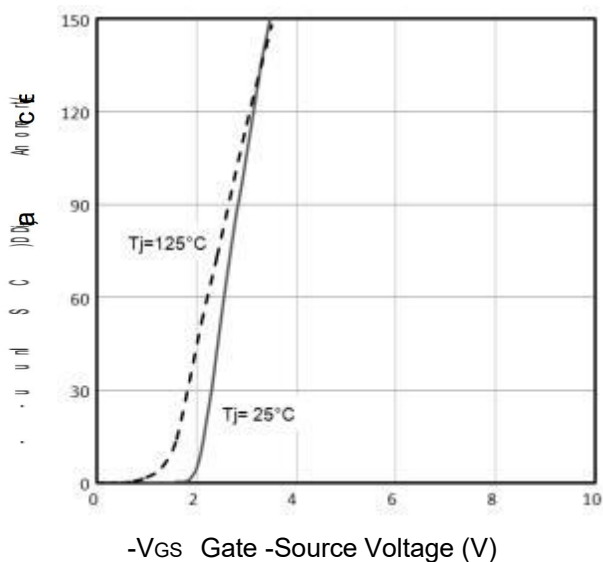


Fig3. Typical Transfer Characteristics

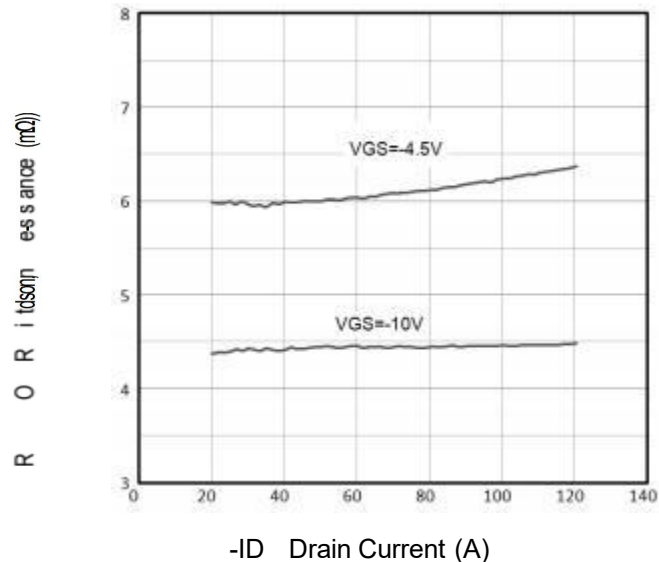
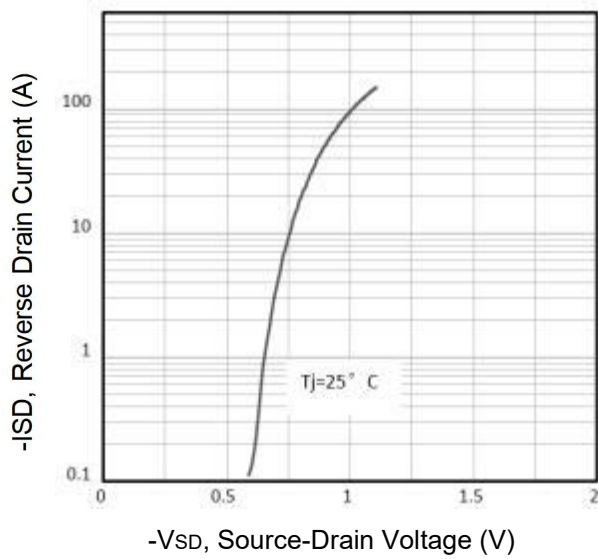
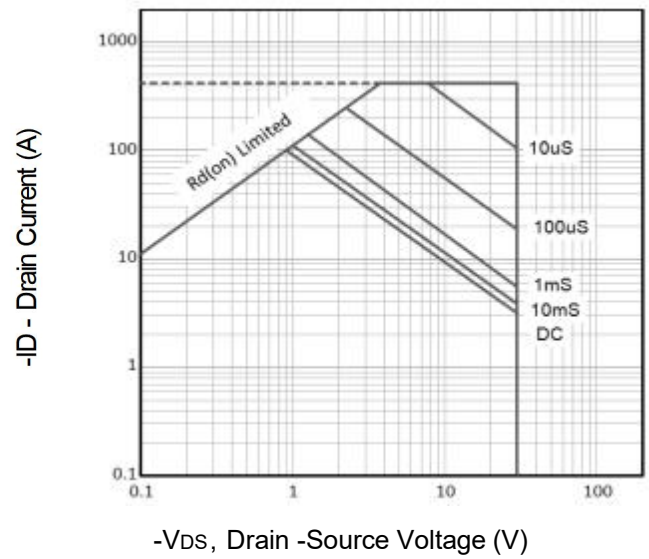
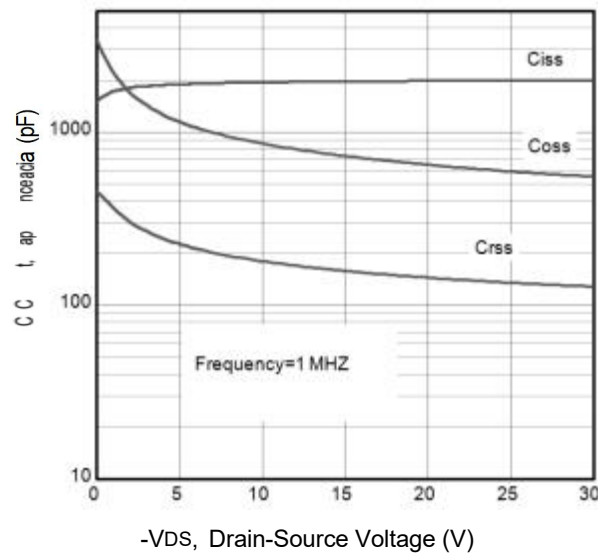
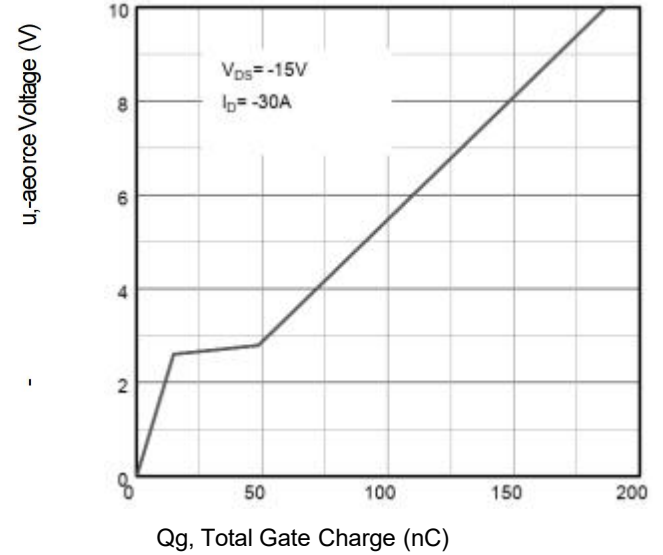
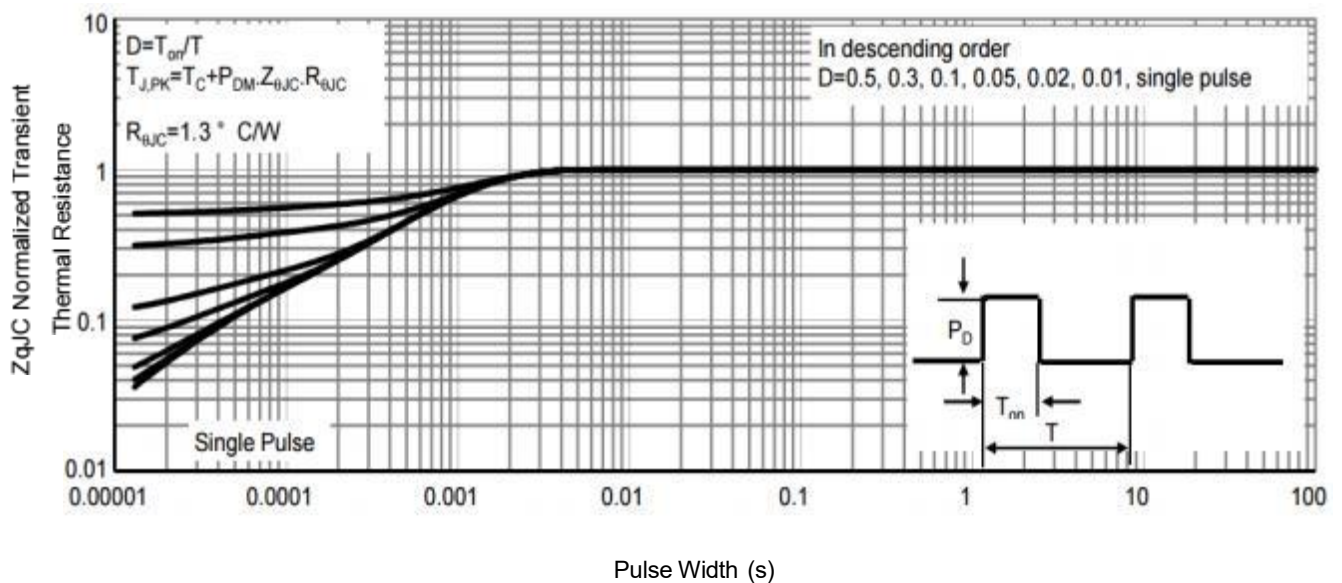


Fig4. On-Resistance vs. Drain Current and Gate


Fig5. Typical Source-Drain Diode Forward Voltage

Fig6. Maximum Safe Operating Area

Fig7. Typical Capacitance Vs. Drain-Source Voltage

Fig8. Typical Gate Charge Vs. Gate-Source Voltage

Fig9. Normalized Maximum Transient Thermal Impedance

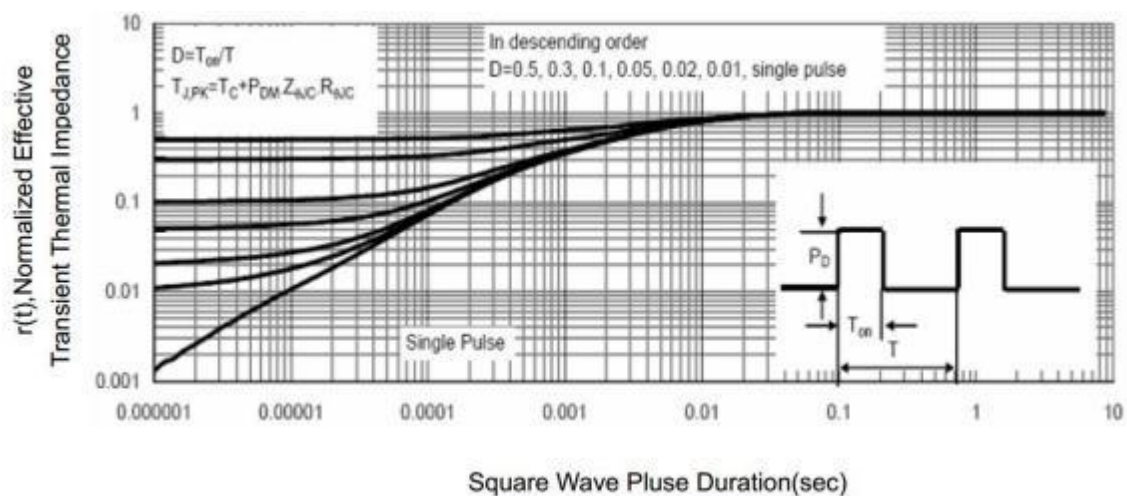


Figure 11 Normalized Maximum Transient Thermal Impedance