

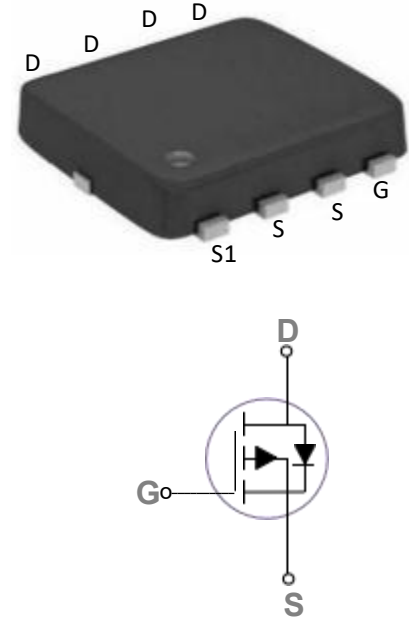
Description:

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) $V_{DS}=-30V$, $I_D=40A$, $R_{DS(on)} < 11m\ \Omega$ @ $V_{GS}=-10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(on)}$.
Excellent package for good heat dissipation.



Absolute Maximum Ratings: ($T_C=25^\circ C$ 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- $T_C=25^\circ C$	-40	A
	Continuous Drain Current- $T_C=100^\circ C$	-32	
I_{DM}	Pulsed Drain Current	-200	
P_D	Power Dissipation- $T_C=25^\circ C$	38	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	3.3	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	55	$^\circ C/W$

Package Marking and Ordering Information:

Part NO.	Marking	Package
SI7617DN-T1-GE3	SI7617DN	DFN3*3-8

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 _b =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} =± 25V, V _{DS} =0A	---	---	±100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	-1	-1.5	-2.0	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =-10V, I _b =-12A	---	8.5	11	m Ω
		V _{GS} =-4.5V, I _D =-7A	---	12	15	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	1779	---	pF
C _{OSS}	Output Capacitance		---	234	---	
C _{rss}	Reverse Transfer Capacitance		---	199	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =-15V, R _L =1 Ω R _{GEN} =3 Ω, V _{GS} =-10V,	---	7	---	ns
t _r	Rise Time		---	26	---	ns
t _{d(off)}	Turn-Off Delay Time		---	68	---	ns
t _f	Fall Time		---	39	---	ns
Q _g	Total Gate Charge	V _{GS} =-10V, V _{DS} =-15V, I _b =-15A	---	45	---	nC
Q _{gs}	Gate-Source Charge		---	1	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	1	---	nC
Drain-Source Diode Characteristics						
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _s =-1A	---	-0.7	-1	V
I _s	Diode Forward Current	VD=VG=0V	---	---	-40	A

I_{sm}	Pulsed Source Current	V _D =V _G =0V	---	---	-200	A
T_{rr}	Reverse Recovery Time	I _s =-4A, dI/dt=100A/μs V _{GS} =0V	---	13.5	---	ns
Q_{rr}	Reverse Recovery Charge		---	3.7	---	nC

Typical Characteristics: (T_C=25 °C unless otherwise noted)

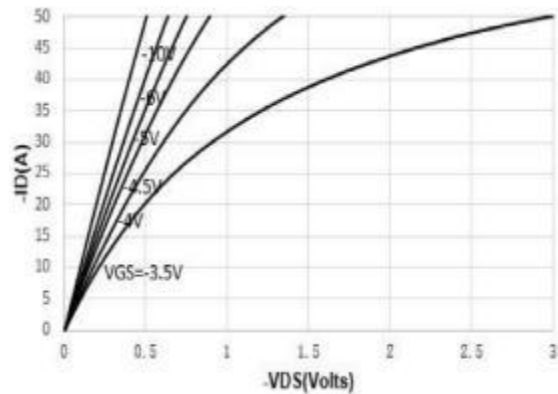


Figure 1. On-Regin Characteristics

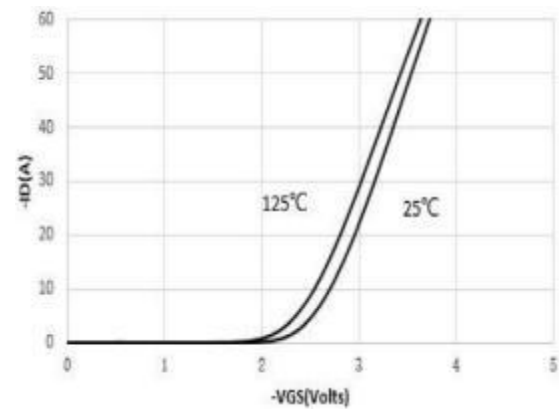


Figure 2. Transfer Characteristics

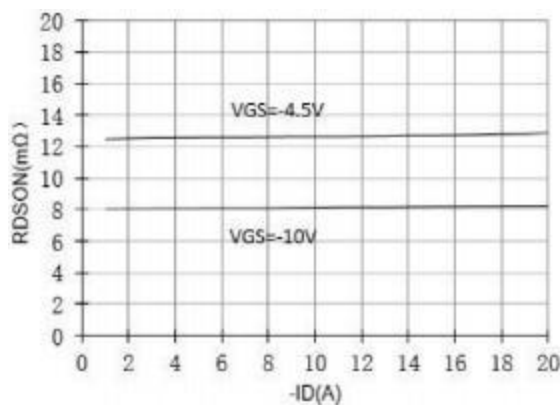


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

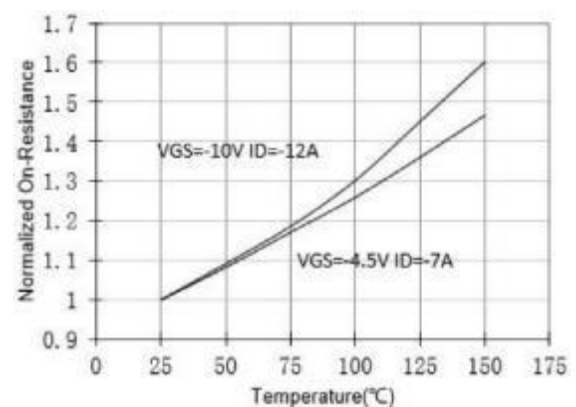


Figure 4. On-Resistance vs. Junction Temperature

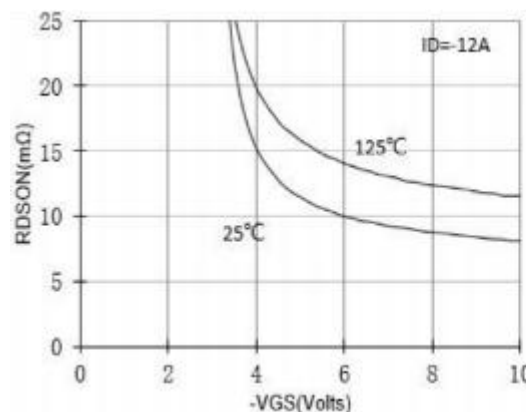


Figure 5. On-Resistance vs. Gate-Source Voltage

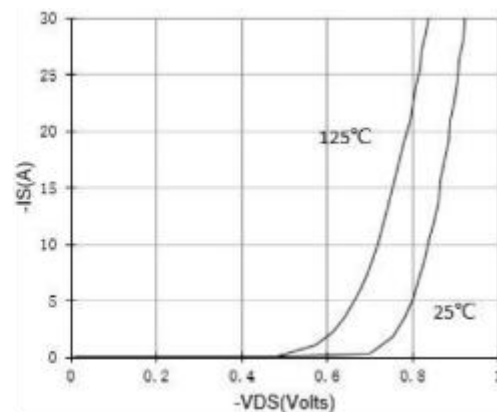


Figure 6. Body-Diode Characteristics

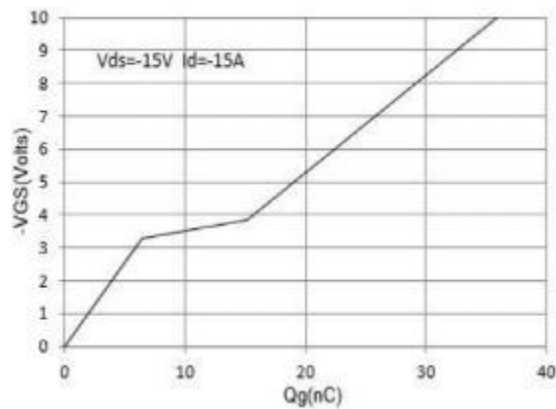


Figure 7. Gate-Charge Characteristics

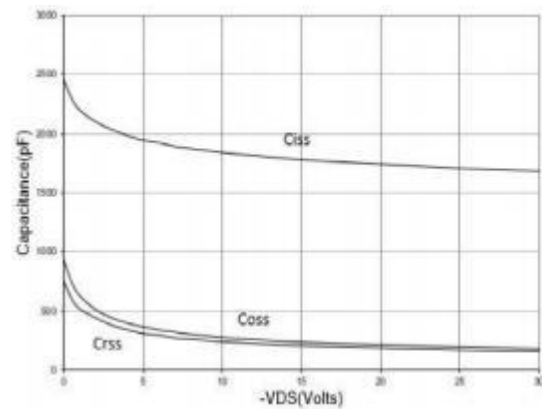


Figure 8. Capacitance Characteristics

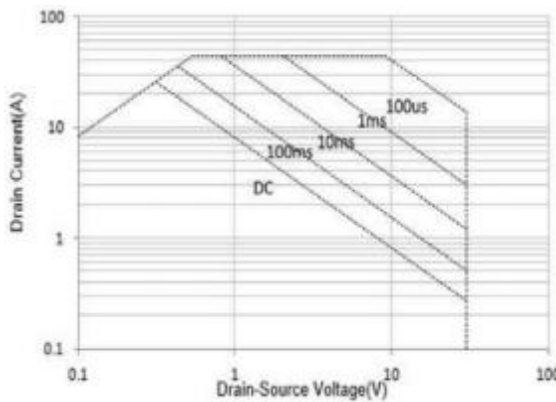


Figure 9. Maximum Forward Biased Safe Operating Area

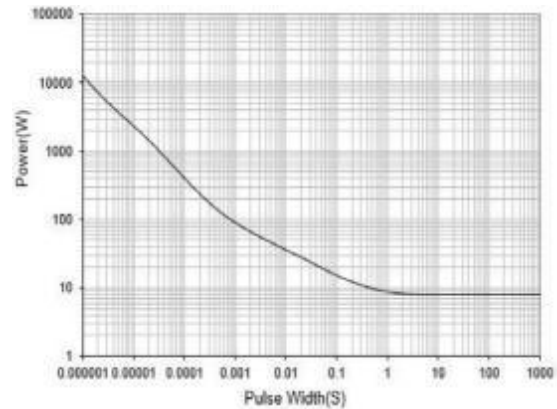


Figure 10. Single Pulse Power Rating Junction-to-Ambient

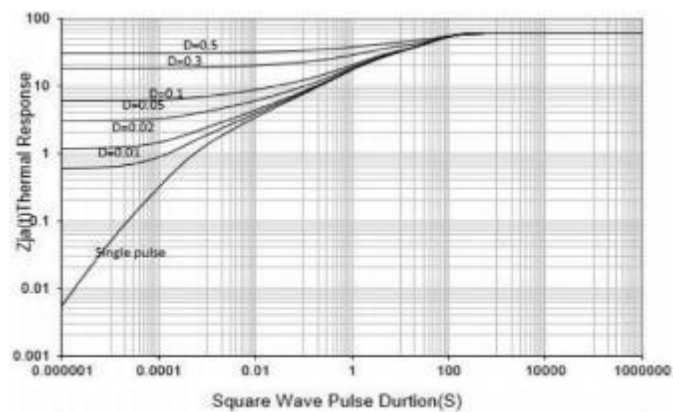


Figure 11. Normalized Maximum Transient Thermal Impedance