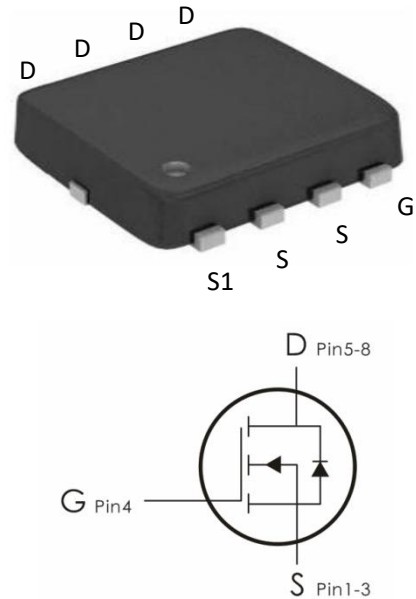


Description:

This N-Channel MOSFET uses advanced trench technology to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

Features:

- 1) $V_{DS}=20V, I_D=65A, R_{DS(ON)} < 4.9m\Omega @ V_{GS}=4.5V$
- 2) Improved dv/dt capability
- 3) Fast switching
- 4) 100% EAS Guaranteed
- 5) Green Device Available.



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

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 10	V
I_D	Continuous Drain Current-Continuous- $T_C=25^\circ C$	65	A
	Continuous Drain Current- $T_C=100^\circ C$	41	
I_{DM}	Drain Current – Pulsed ¹	260	A
E_{AS}	Single Pulse Avalanche Energy ²	120	mJ
I_{AS}	Single Pulse Avalanche Current ²	49	A
P_D	Power Dissipation - $T_C=25^\circ C$	45	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	2.8	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	62	

Package Marking and Ordering Information:

Part NO.	Marking	Package
DOZ65N02	65N02	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 _D =250 μ A	20	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{GS} =0V, V _{DS} =20V, T _J =25 °C	---	---	1	μ A
		V _{GS} =0V, V _{DS} =16V, T _J =125 °C	---	---	10	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ± 10V, V _{DS} =0A	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	0.3	0.6	1	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =4.5V, I _D =25A	---	4.1	4.9	m Ω
		V _{GS} =2.5V, I _D =20A	---	5	6.5	
		V _{GS} =1.8V, I _D =10A	---	6.6	8.6	
G _{FS}	Forward Transconductance	V _{DS} =10V , I _S =10A	---	23	---	S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz	---	2450	3700	pF
C _{oss}	Output Capacitance		---	280	430	
C _{rss}	Reverse Transfer Capacitance		---	220	340	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time ^{3,4}	V _{DD} =10V , V _{GS} =4.5V , R _G =6 Ω , I _D =30A	---	14	20	ns
t _r	Rise Time ^{3,4}		---	30	45	ns
t _{d(off)}	Turn-Off Delay Time ^{3,4}		---	65	100	ns
t _f	Fall Time ^{3,4}		---	20	30	ns
Q _g	Total Gate Charge ^{3,4}	V _{DS} =10V , V _{GS} =4.5V , I _D =30A	---	25	40	nC
Q _{gs}	Gate-Source Charge ^{3,4}		---	3.6	6	nC
Q _{gd}	Gate-Drain “Miller” Charge ^{3,4}		---	6	9	nC

Drain-Source Diode Characteristics						
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	65	A
I_{SM}	Pulsed Source Current		---	---	130	A
V_{SD}	Source-Drain Diode Forward Voltage	$V_{GS}=0V$, $I_S=1A$, $T_J=25^\circ C$	---	---	1	V

Notes:

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=15V$, $V_{GS}=10V$, $L=0.1mH$, $I_{AS}=49A$, $R_G=25\Omega$, Starting $T_J=25^\circ C$.
3. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

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

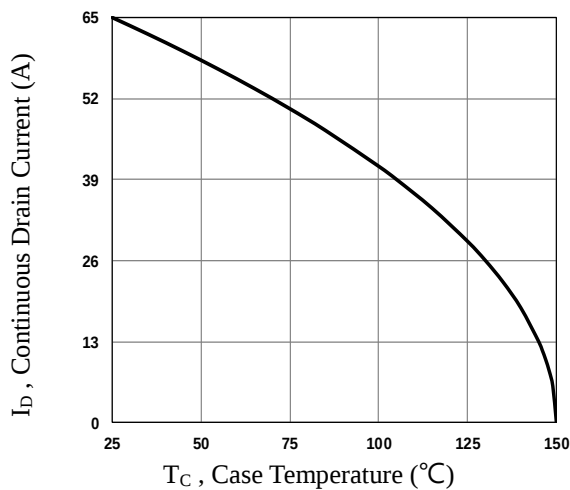


Fig.1 Continuous Drain Current vs. T_C

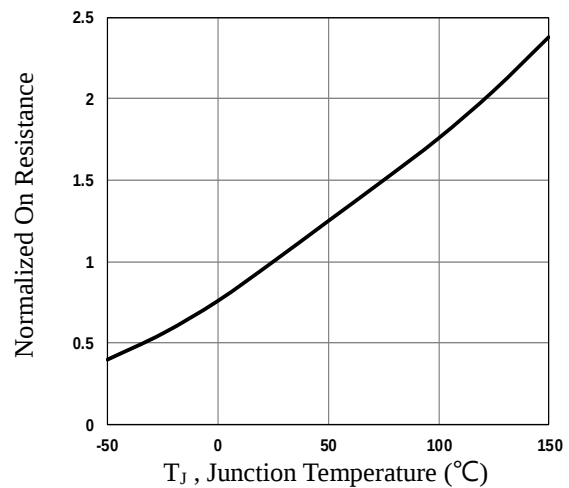


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

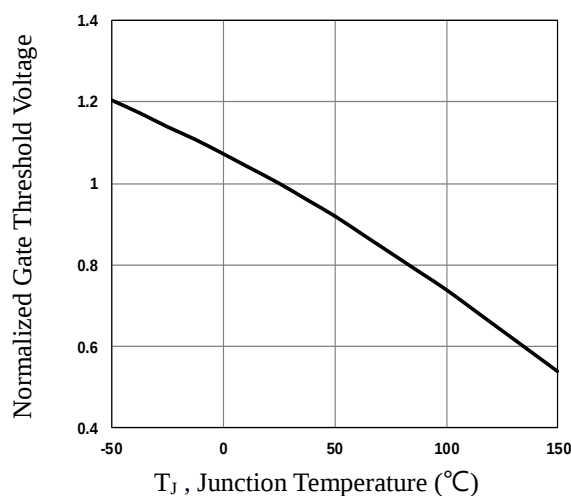


Fig.3 Normalized V_{th} vs. T_J

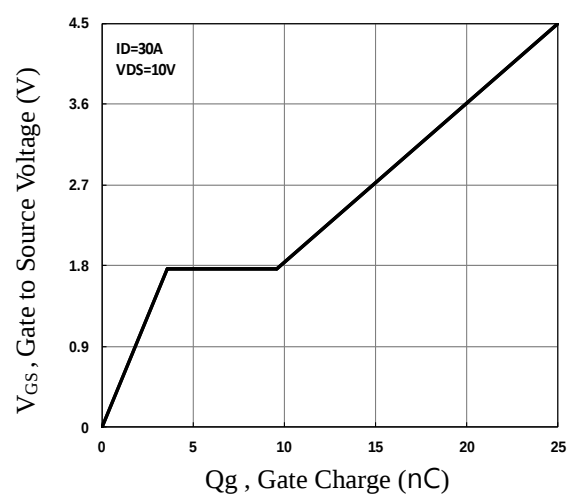


Fig.4 Gate Charge Waveform

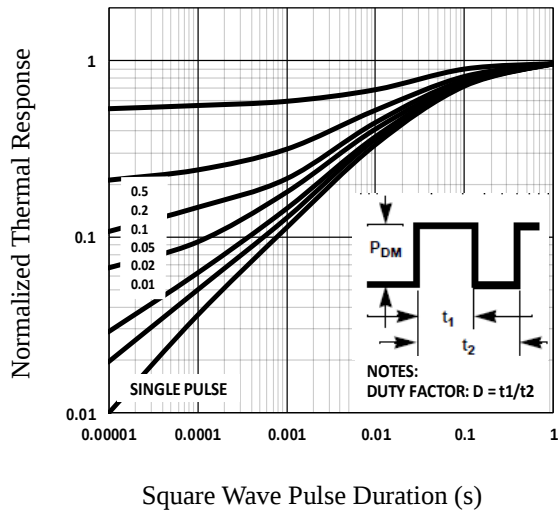


Fig.5 Normalized Transient Impedance

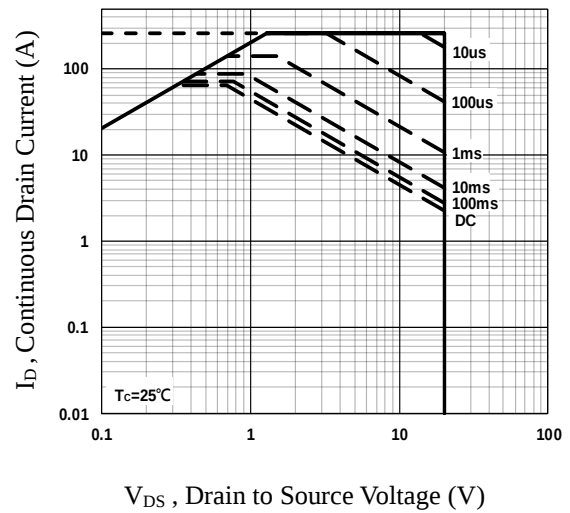


Fig.6 Maximum Safe Operation Area

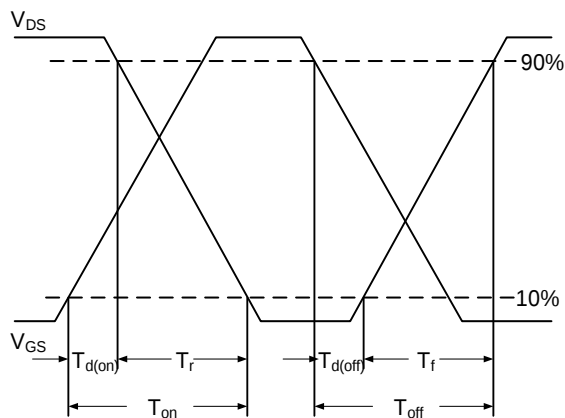


Fig.7 Switching Time Waveform

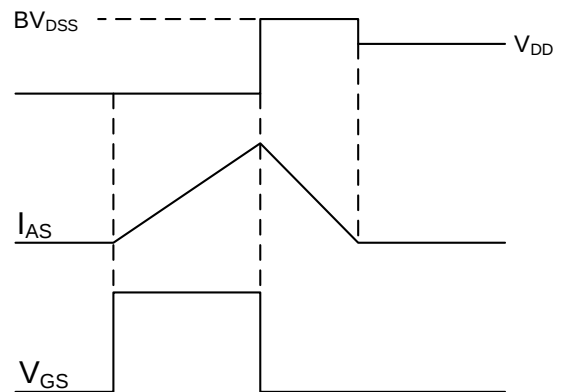


Fig.8 EAS Waveform