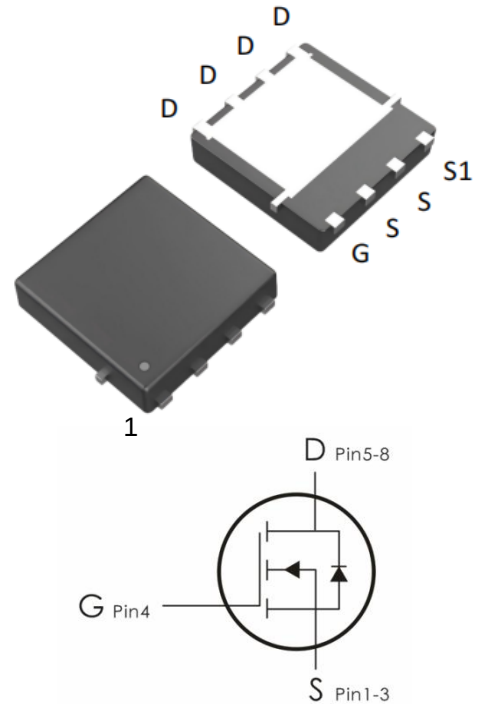


Description:

This N-Channel MOSFET uses advanced SGT 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) $V_{DS}=40V, I_D=60A, R_{DS(ON)}<5m\Omega@V_{GS}=10V$
- 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	40	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current- $T_C=25^{\circ}C^1$	60	A
	Continuous Drain Current- $T_C=100^{\circ}C^1$	42	
I_{DM}	Drain Current – Pulsed ²	220	A
EAS	Single Pulse Avalanche Energy ³	72	mJ
P_D	Power Dissipation - $T_C=25^{\circ}C$	35	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^{\circ}C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance Junction- Ambient ⁴	45	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance, Junction to Case	3.5	$^{\circ}C/W$

Package Marking and Ordering Information:

Part NO.	Marking	Package
DOZ60N04	60N04	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 μA	40	---	---	V
I _{DSS}	Drain- Source Leakage Current	V _{GS} =0V, V _{DS} =40V	---	---	1	μA
I _{GSS}	Gate- Source Leakage Current	V _{GS} = ±20V, V _{DS} =0A	---	---	±100	nA
On Characteristics						
V _{GS(th)}	GATE- Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μA	1	1.9	2.5	V
R _{DS(ON)}	Drain- Source On Resistance	V _{GS} =10V, I _D =30A	---	4	5	mΩ
		V _{GS} =4.5V, I _D =20A	---	5.5	7.6	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =20V, V _{GS} =0V, f=1MHz	---	1313	---	pF
C _{oss}	Output Capacitance		---	43	---	
C _{rss}	Reverse Transfer Capacitance		---	29	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{DD} =20V , V _{GS} =10V , R _G =6Ω	---	6	---	ns
t _r	Rise Time		---	47	---	ns
t _{d(off)}	Turn-Off Delay Time		---	29	---	ns
t _f	Fall Time		---	11	---	ns
Q _g	Total Gate Charge	V _{DS} =20V , V _{GS} =10V , I _D =20A	---	18	---	nC
Q _{gs}	Gate- Source Charge		---	3.3	---	nC
Q _{gd}	Gate- Drain “Miller” Charge		---	4.2	---	nC
Drain- Source Diode Characteristics						
I _S	Continuous Source Current	VG=VD=0V ,	---	---	60	A
I _{SM}	Pulsed Source Current ¹		---	---	42	A
V _{SD}	Forward on voltage	I _{SD} = 1A, V _{GS} =0V	---	0.7	---	V
T _{RR}	Reverse recovery time	V _{DD} = 20 V, I _D = 20 A, di/dt = 100 A/μS	---	33	---	ns
Q _{RR}	Reverse recovery charge		---	23	---	nC

Notes:

1. The max drain current rating is silicon limited
2. The max drain current rating is package limited
3. Repetitive Rating: Pulse width limited by maximum junction temperature
4. $L=0.5\text{ mH}, V_{DD}=20\text{ V}, I_{AS}=17\text{ A}, R_G=50\ \Omega$, Starting $T_J=25\ ^{\circ}\text{C}$
5. Mount on minimum PCB layout

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

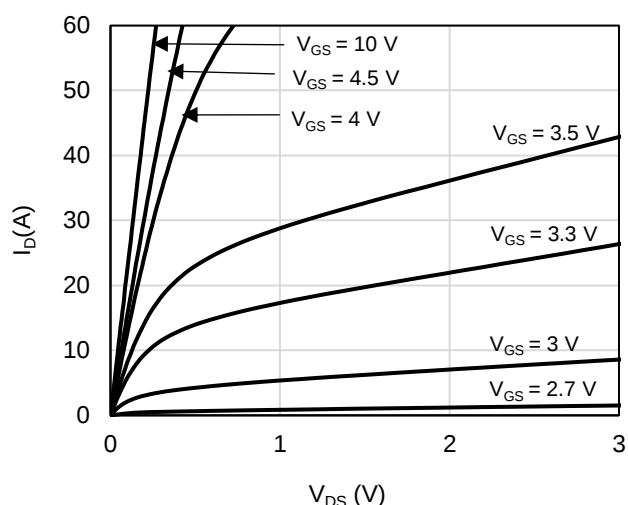


Figure 1: On-Region Characteristics

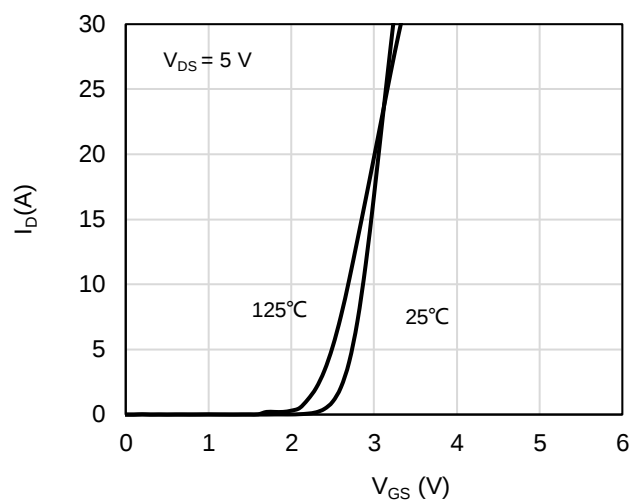


Figure 2: Transfer Characteristics

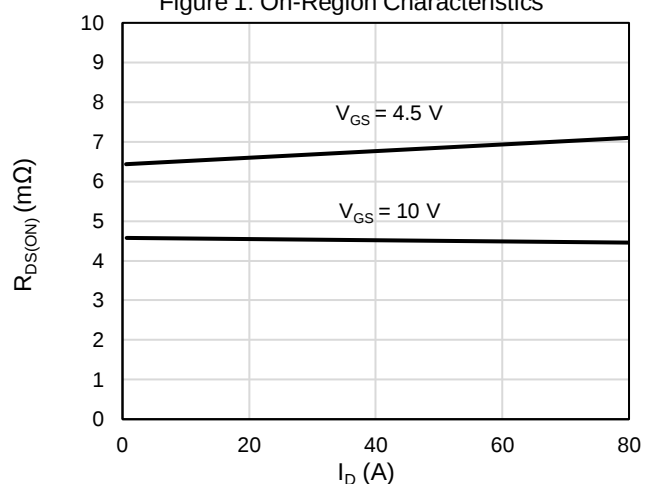


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

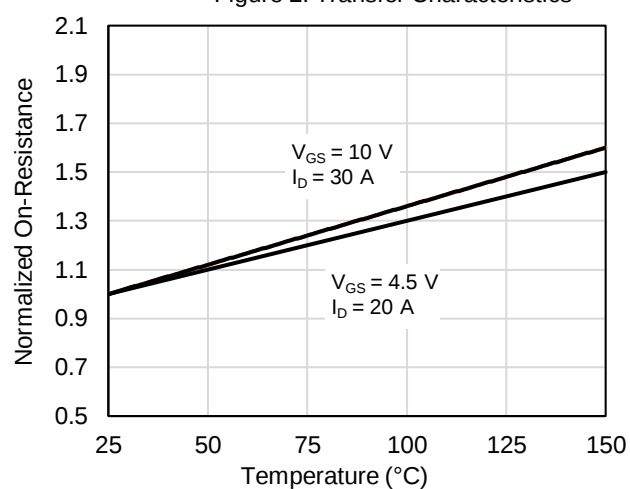


Figure 4: On-Resistance vs. Junction Temperature

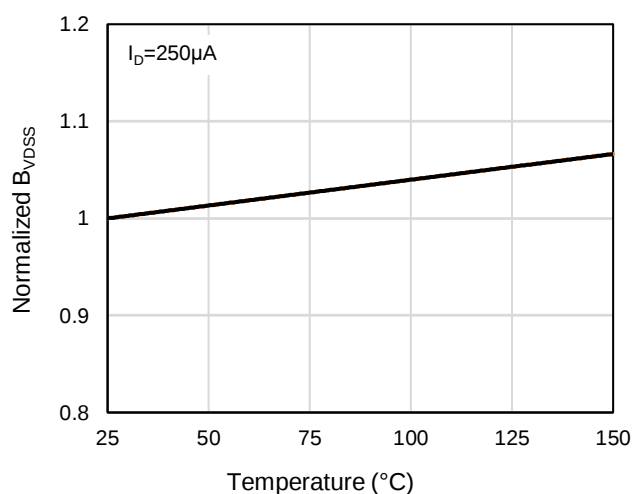


Figure 5: Breakdown Voltage vs. Junction Temperature

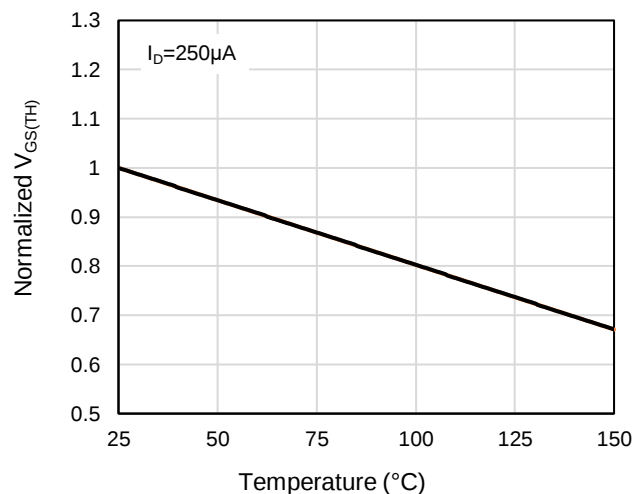


Figure 6: Threshold Voltage vs. Junction Temperature

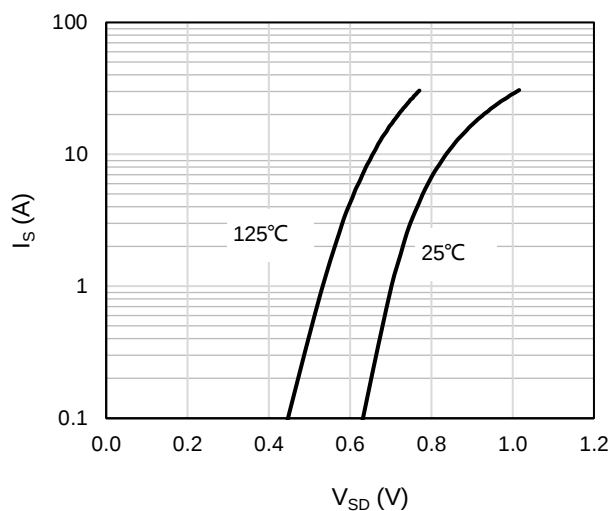


Figure 7: Body-Diode Characteristics

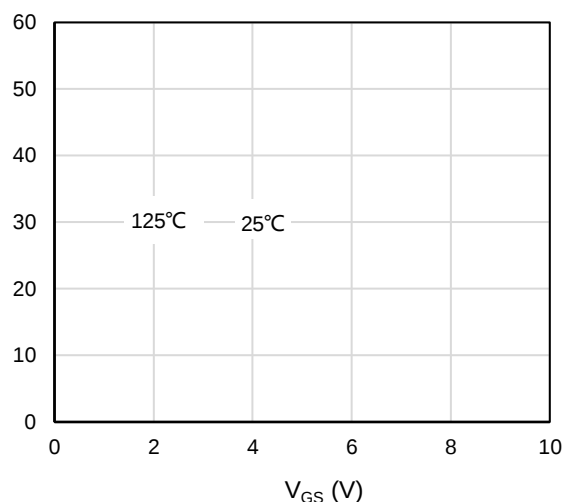


Figure 8: On-Resistance vs. Gate-Source Voltage

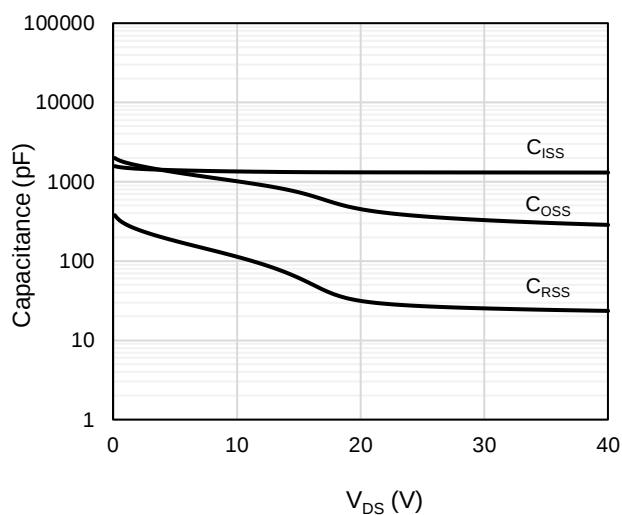


Figure 9: Capacitance Characteristics

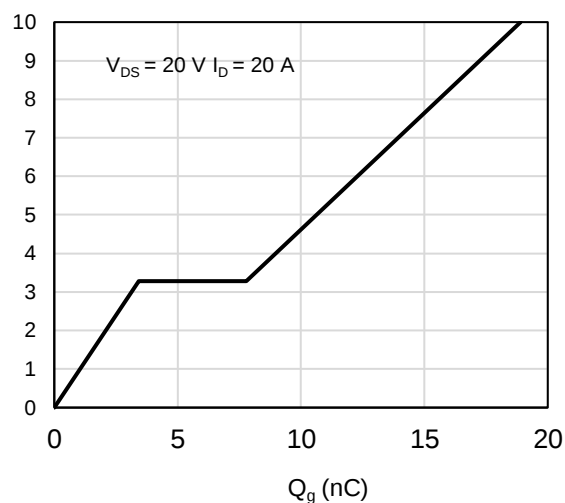


Figure 10: Gate-Charge Characteristics

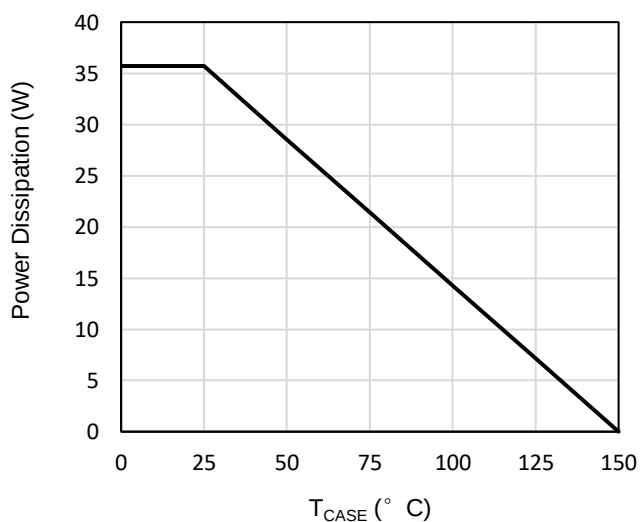


Figure 11: Power De-rating

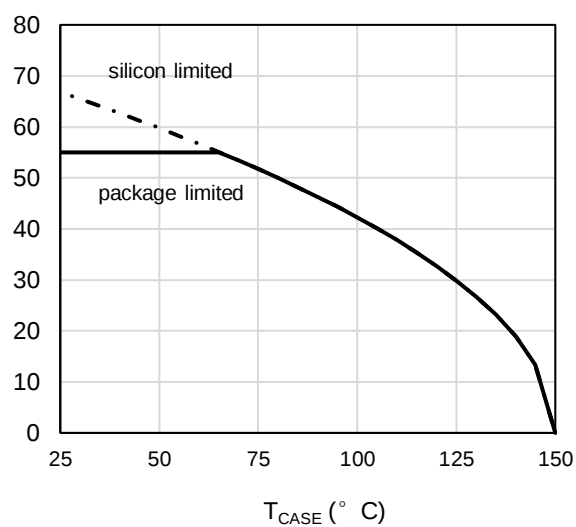


Figure 12: Current De-rating