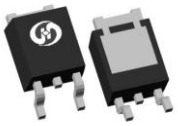
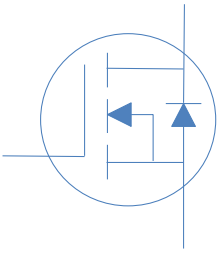
100V N-Ch Power MOSFET

D

V_{DS}	100	V
$R_{DS(on),typ}$	22	m
$I_{D\ (Slicon\ Limited)}$	31	A
$I_{D\ (Package\ Limited)}$	24	A

D





Part Number	Package	Marking
HGD230N10A	TO-252	GD230N10A

Absolute Maximum Ratings at T_j

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current (Silicon Limited)	I_D	T_C	31	A
		T_C	22	
Continuous Drain Current (Package Limited)		T_C	24	
Drain to Source Voltage	V_{DS}	-	100	V
Gate to Source Voltage	V_{GS}	-	20	V
Pulsed Drain Current	I_{DM}	-	100	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.4mH, T_C	20	mJ
Power Dissipation	P_D	T_C	52	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to175	

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Case	R	2.9	
Thermal Resistance Junction-Ambient	R	50	

Electrical Characteristics at T_j

Static Characteristics

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250 A	100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250 A	2	3	4	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=100V, T_j	-	-	1	A
		V_{GS}=0V, V_{DS}=100V, T_j	-	-	100	
Gate to Source Leakage Current	I_{GSS}	V_{GS} $_{DS}$=0V	-	-	100	nA
Drain to Source on Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=10A	-	22	25	m
Transconductance	g_{fs}	V_{DS}=5V, I_D=10A	-	19	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS} Open, f=1MHz	-	1.7	-	

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, f=1MHz	-	723	-	pF
Output Capacitance	C_{oss}		-	107	-	
Reverse Transfer Capacitance	C_{rss}		-	7.6	-	
Total Gate Charge	Q_g	V_{DD}=50V, I_D=10A, V_{GS}=10V	-	11	-	nC
Gate to Source Charge	Q_{gs}		-	3	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	3	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=50V, I_D=10A, V_{GS}=10V, R_G=10 ,	-	6	-	ns
Rise time	t_r		-	3	-	
Turn off Delay Time	$t_{d(off)}$		-	10	-	
Fall Time	t_f		-	3	-	

Reverse Diode Characteristics

Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_F=20A	-	0.9	1.2	V
Reverse Recovery Time	t_{rr}	V_R=50V, I_F=10A, dI_F/dt=500A/ s	-	33	-	ns
Reverse Recovery Charge	Q_{rr}		-	132	-	nC

Fig 1. Typical Output Characteristics

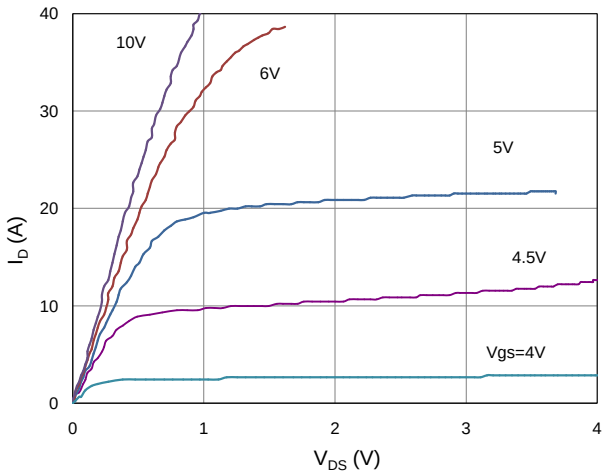


Figure 2. On-Resistance vs. Gate-Source Voltage

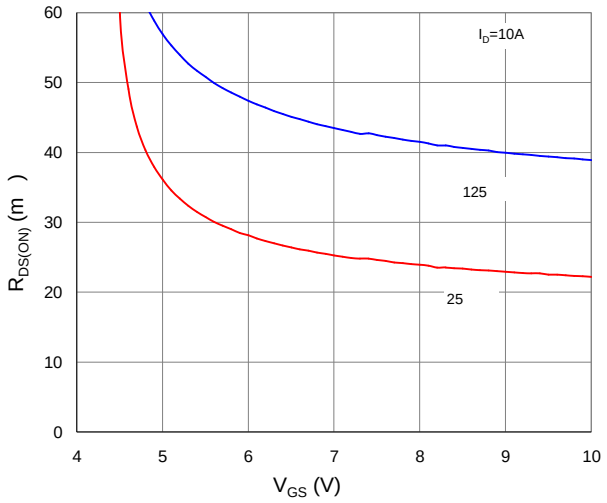


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

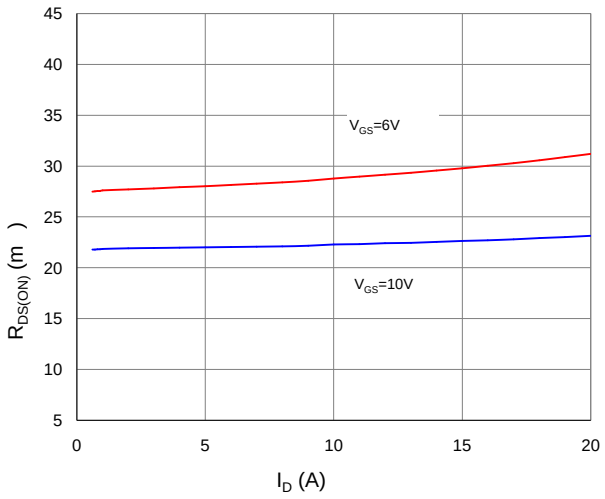


Figure 4. Normalized On-Resistance vs. Junction Temperature

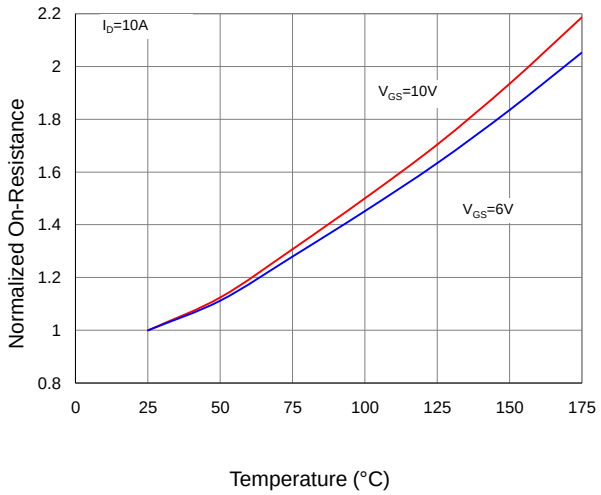


Figure 5. Typical Transfer Characteristics

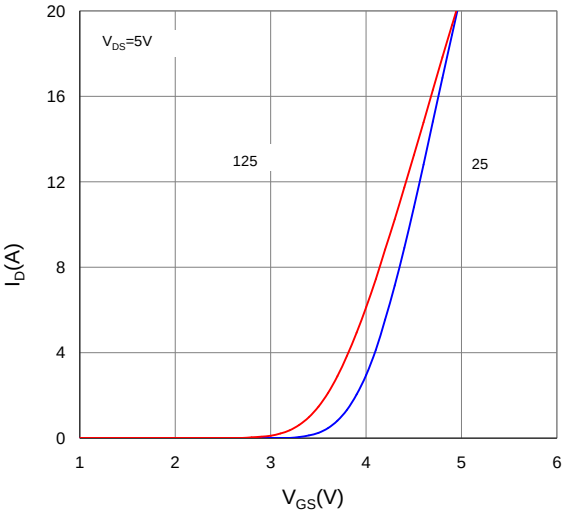


Figure 6. Typical Source-Drain Diode Forward Voltage

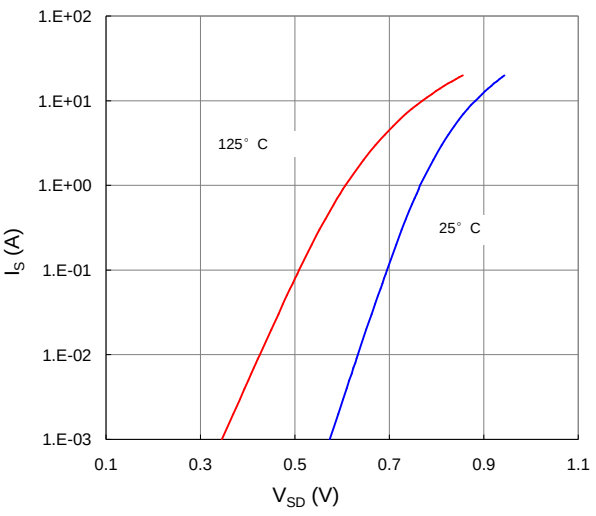


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

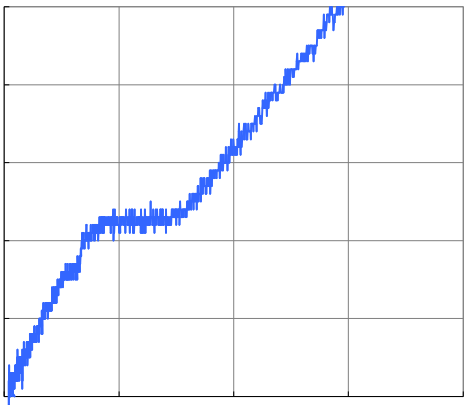


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

Figure 9. Maximum Safe Operating Area

Figure 10. Maximun Drain Current vs. Case Temperature

Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case

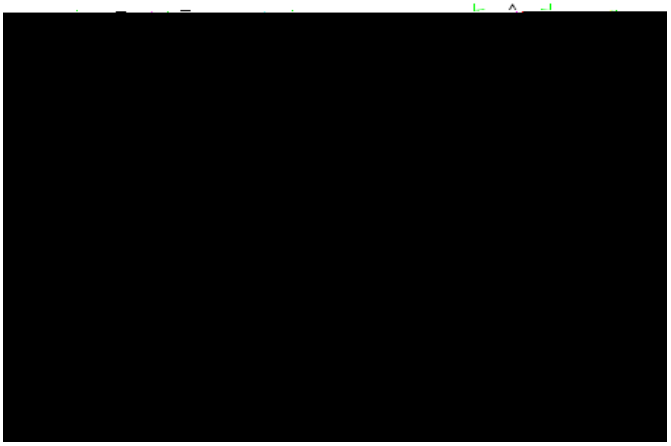
Inductive switching Test

Gate Charge Test

Uclamped Inductive Switching (UIS) Test

DioMd Indulam.er 1.0

TO-252, 3 leads



SYMBOL	DIMENSIONAL REQMTS		
	MIN	NOM	MAX
E	6.40	6.60	6.731
L	1.40	1.52	1.77
L1		2.743 REF	
L2		0.508 BSC	
L3	0.89	--	1.27
L4	0.64	--	1.01
L5	--	--	--
D	6.00	6.10	6.223