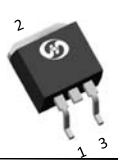
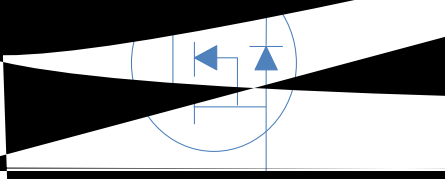
HGB029NE4SL , HGP029NE4SL

45V

V_{DS}	
$R_{DS(on),t}$	
$R_{DS(on),t}$	
$R_{DS(on),t}$	
$R_{DS(on),t}$	
$I_{D\ (Sillicon}$	
$I_{D\ (Package}$	





Part Number	Package	Marking
HGB029NE4SL	TO-263	GB029NE4SL
HGP029NE4SL	TO-220	GP029NE4SL

Absolute Maximum Ratings at T_j

Parameter	Symbol	Conditions	
Continuous Drain Current (Silicon Limited)	I_D	T_C	
		T_C	
Continuous Drain Current (Package Limited)		T_C	
Drain to Source Voltage	V_{DS}	-	
Gate to Source Voltage	V_{GS}	-	
Pulsed Drain Current	I_{DM}	-	
Avalanche Energy, Single Pulse	E_{AS}	L=0.5mH, T_C	
Power Dissipation	P_D	T_C	
Operating and Storage Temperature	T_J, T_{stg}	-	

Absolute Maximum Ratings

Parameter	Symbol	
Thermal Resistance Junction-Case	$R_{\theta JC}$	
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	

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=250μA		45	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA		1	1.4	2.2	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=45V, T_j		-	-	1	μA
		V_{GS}=0V, V_{DS}=45V, T_j		-	-	100	
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V		-	-	±100	nA
Drain to Source on Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=20A	TO-263	-	2.2	2.6	mΩ
		V_{GS}=4.5V, I_D=20A	TO-263	-	2.9	3.7	mΩ
Drain to Source on Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=20A	TO-220	-	2.5	2.9	mΩ
		V_{GS}=4.5V, I_D=20A	TO-220	-	3.2	4.0	mΩ
Transconductance	g	V_{DS}=5V, I_D=20A		-	65	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS}		-	1.6	-	Ω

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}	-	3322	-	pF
Output Capacitance	C_{oss}		-	1367	-	
	C_{rss}		-	96	-	
Total Gate Charge (10V)	Q_g (10V)	V_{DD}=20V, I_D=20A, V_{GS}=10V	-	50	-	nC
Total Gate Charge (4.5V)	Q_g (4.5V)		-	25	-	
Gate to Source Charge	Q_{gs}		-	8	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	9.5	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=20V, I_D=20A, V_{GS}=10V, R_G=10Ω,	-	14	-	ns
Rise time	t_r		-	12	-	
	t		-	57	-	
Fall Time	t		-	18	-	

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=20V, I_F=20A, dI_F μs	-	40	-	ns
Reverse Recovery Charge	Q_{rr}		-	64	-	nC

Fig 1. Typical Output Characteristics

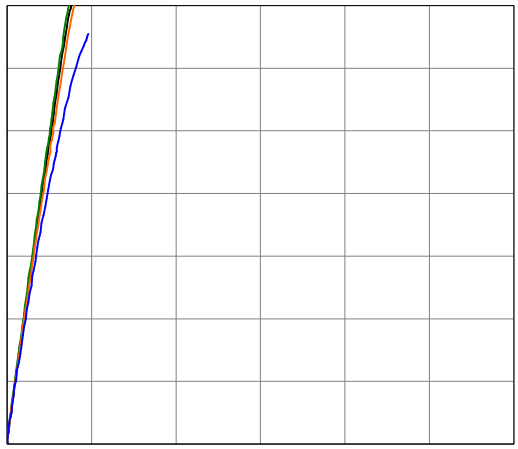


Figure 2. On-Resistance vs. Gate-Source Voltage

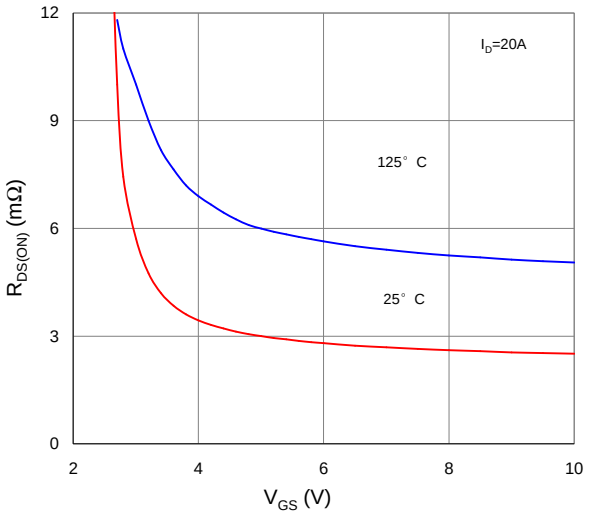


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

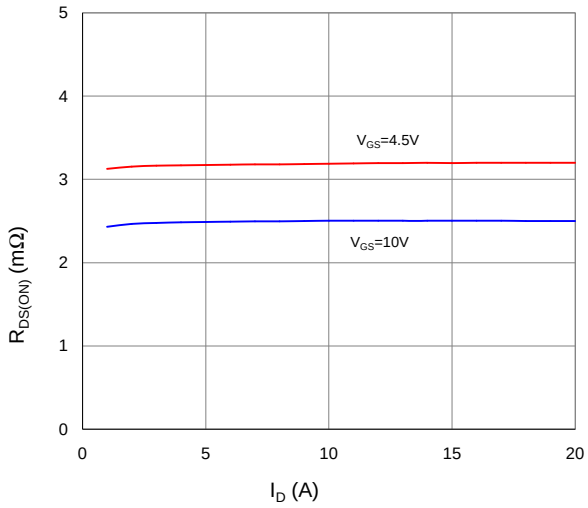


Figure 6. Typical Source-Drain Diode Forward Voltage

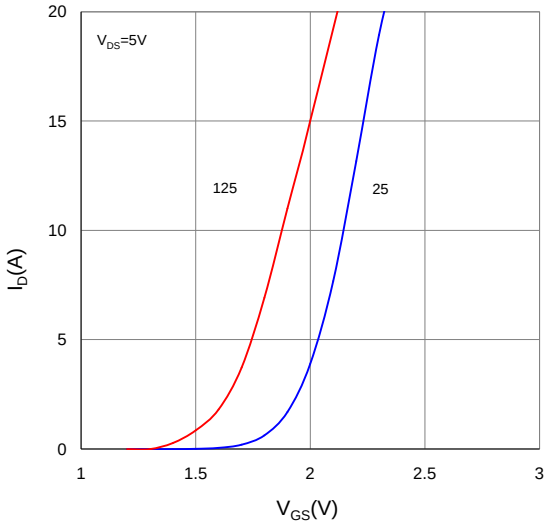


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Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

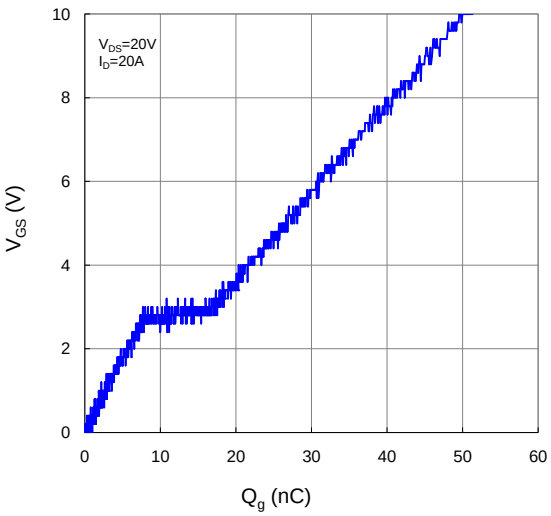

Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

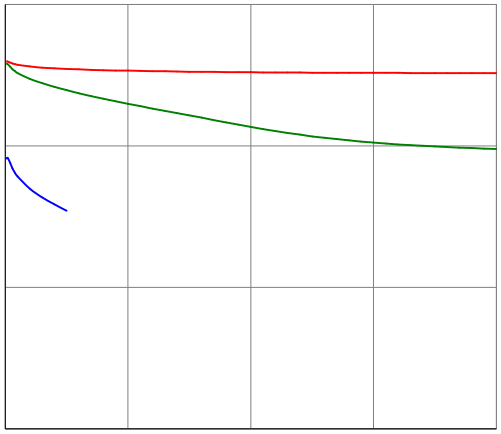

Figure 10. Maximun Drain Current vs. Case Temperature

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