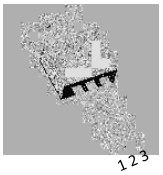
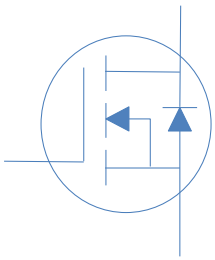
100V N-Ch Power MOSFET

V_{DS}		100	V
$R_{DS(on),typ}$	TO-263	3.4	mΩ
$R_{DS(on),typ}$	TO-220	3.7	mΩ
$I_{D\ (Sillicon\ Limited)}$		167	A





Part Number	Package	Marking
HGB042N10A	TO-263	GB042N10A
HGP042N10A	TO-220	GP042N10A

Absolute Maximum Ratings at T_j=25 (unless otherwise specified)

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current (Silicon Limited)	I_D	T_C=25	167	A
		T_C=100	118	
Drain to Source Voltage	V_{DS}	-	100	V
Gate to Source Voltage	V_{GS}	-	±20	V
Pulsed Drain Current	I_{DM}	-	450	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.1mH, T_C=25	180	mJ
Power Dissipation	P_D	T_C=25	231	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to175	

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Case	$R_{\theta JC}$	0.65	/W
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	60	/W

Electrical Characteristics at T_j=25 (unless otherwise specified)

Static Characteristics

Parameter	Symbol	Conditions		Value			Unit
				min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA		100	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA		2	3	4	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=100V, T_j=25		-	-	1	μA
		V_{GS}=0V, V_{DS}=100V, T_j=100		-	-	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	-	3.4	3.9	mΩ
Drain to Source on Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=20A	TO-220	-	3.7	4.2	mΩ
Transconductance	g_{fs}	V_{DS}=5V, I_D=20A		-	50	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS} Open, f=1MHz		-	1.3	-	Ω

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, f=1MHz	-	3650	-	pF
Output Capacitance	C_{oss}		-	1110	-	
Reverse Transfer Capacitance	C_{rss}		-	43	-	
Total Gate Charge	Q_g	V_{DD}=50V, I_D=20A, V_{GS}=10V	-	75	-	nC
Gate to Source Charge	Q_{gs}		-	10	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	34	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=50V, I_D=20A, V_{GS}=10V, R_G=10Ω,	-	13	-	ns
Rise time	t_r		-	19	-	
Turn off Delay Time	$t_{d(off)}$		-	45	-	
Fall Time	t_f		-	27	-	

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=20A, dI_F/dt=500A/μs	-	50	-	ns
Reverse Recovery Charge	Q_{rr}		-	275	-	nC

Fig 1. Typical Output Characteristics

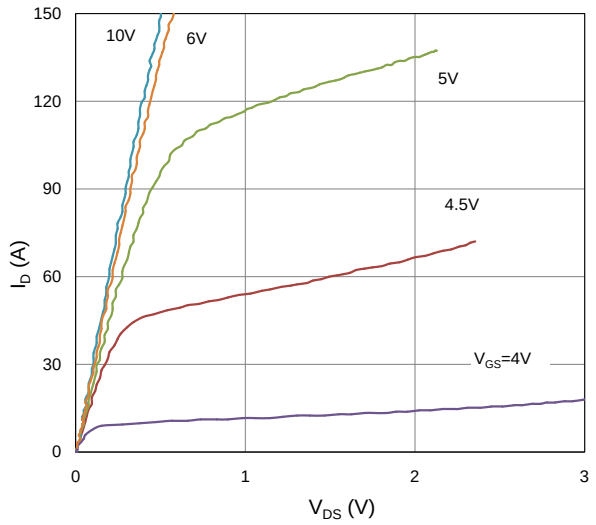


Figure 2. On-Resistance vs. Gate-Source Voltage

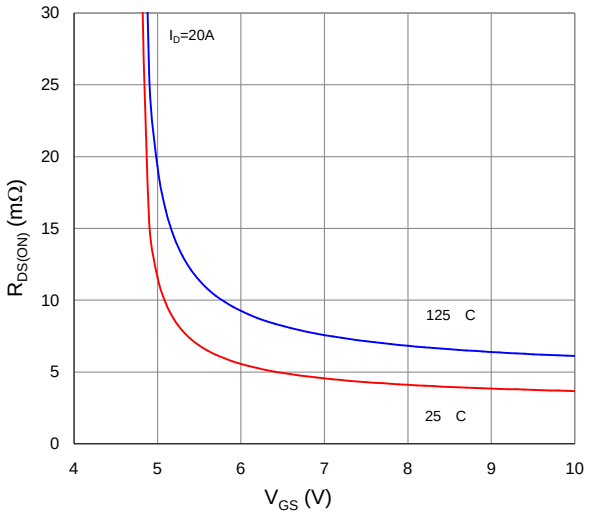


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

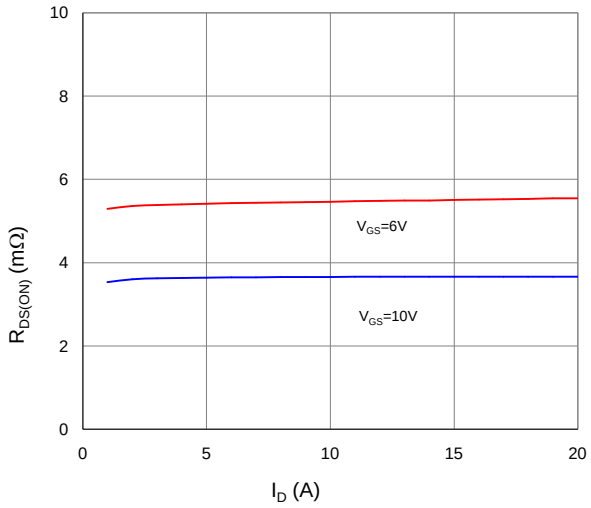


Figure 4. Normalized On-Resistance vs. Junction Temperature

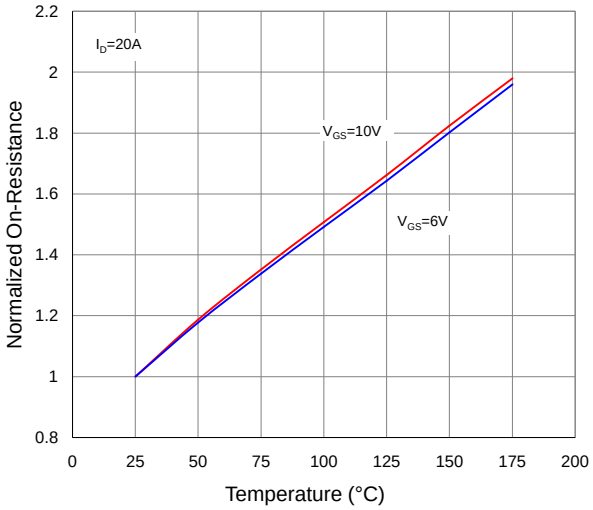


Figure 5. Typical Transfer Characteristics

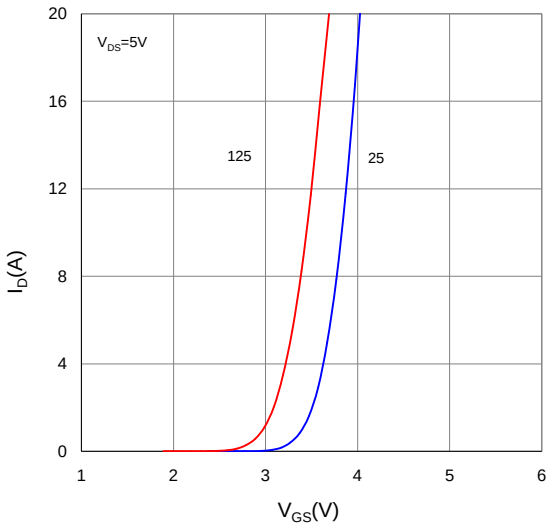


Figure 6. Typical Source-Drain Diode Forward Voltage

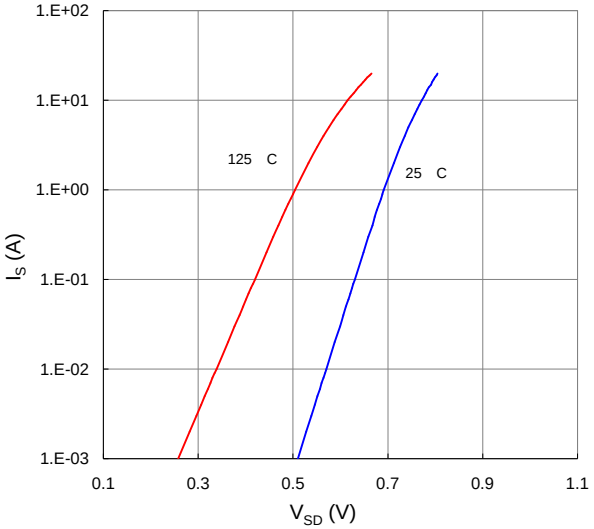


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

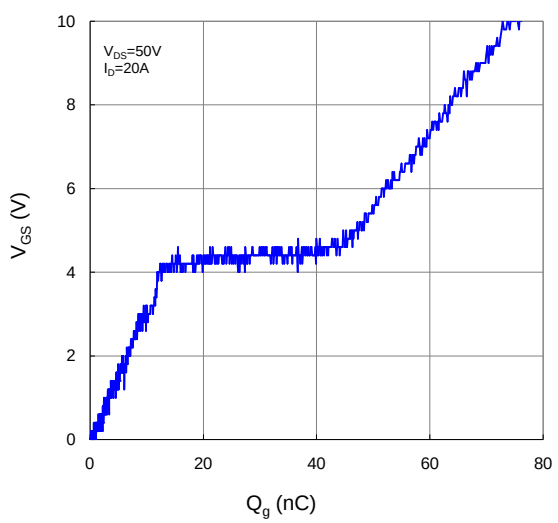


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

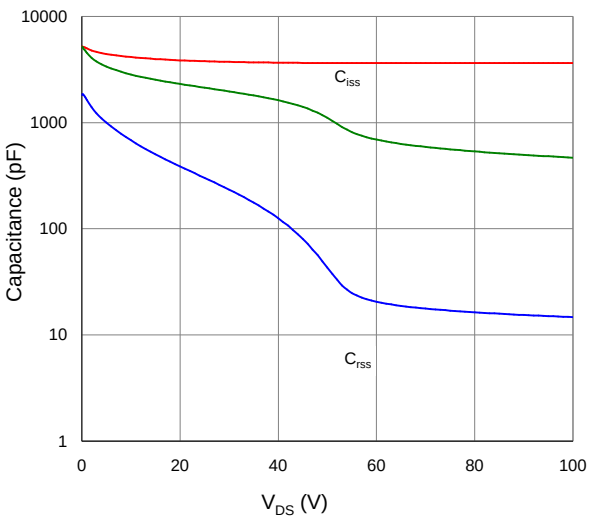
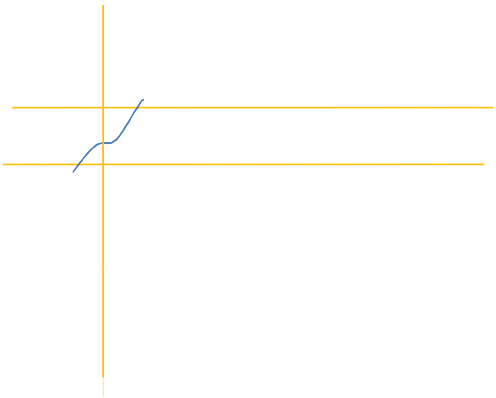


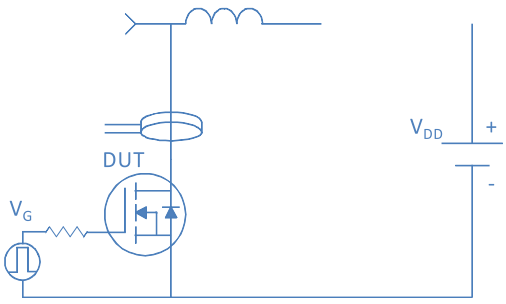
Figure 9. Maximum Safe Operating Area

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	
	

Diode Recovery Test	

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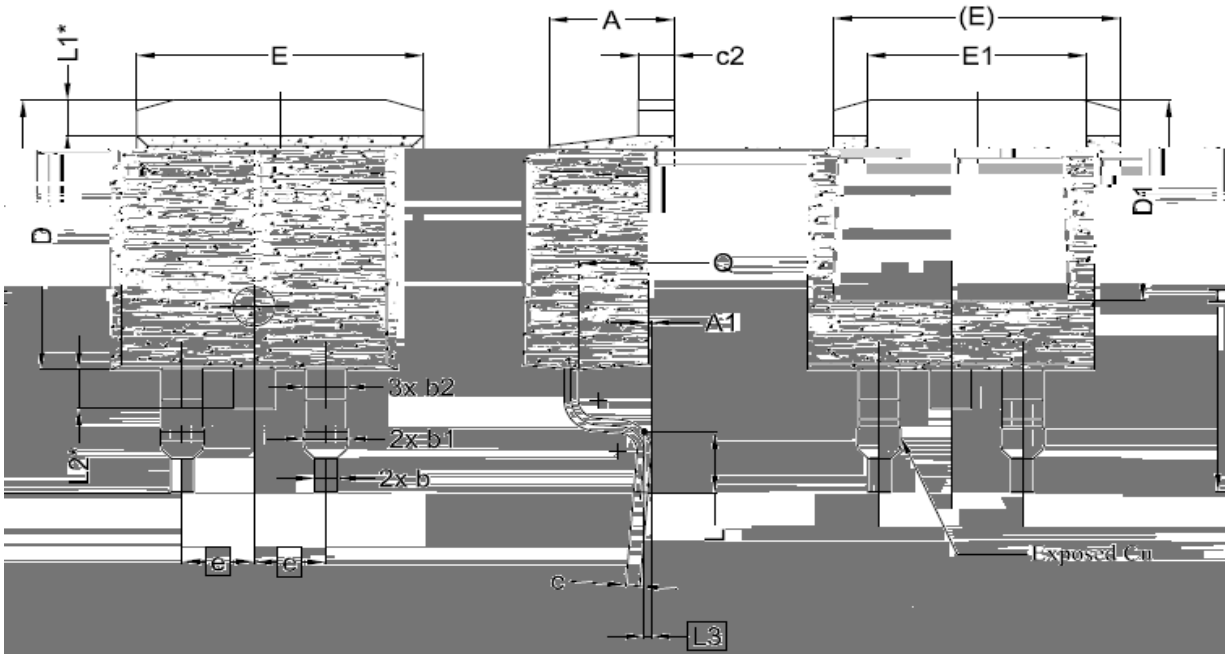
Package Outline

TO-263, 3 leads



SYMBOL	DIMENSIONS		
	MIN.	NOM.	MAX.
A	4.24	4.44	4.64
A1	0.00	0.10	0.25
b	0.70	0.80	0.90
b1	1.20	1.55	1.75
b2	1.20	1.45	1.70
c	0.40	0.50	0.60
c2	1.15	1.27	1.40
D	8.82	8.92	9.02
D1	6.86	7.65	—
E	9.96	10.16	10.36
E1	6.89	7.77	7.89
e	2.54 BSC		
H	14.61	15.00	15.88
L	1.78	2.32	2.79
L1	1.36 REF.		
L2	1.50 REF.		
L3	0.25 BSC		
Q	2.30	2.48	2.70