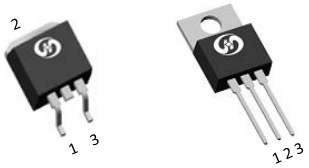
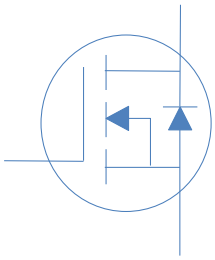
150V N-Ch Power MOSFET

V_{DS}		150	V
$R_{DS(on),TYP}$	TO-263	5.3	mΩ
$R_{DS(on),TYP}$	TO-247	5.4	mΩ
$R_{DS(on),TYP}$	TO-220	5.5	mΩ
$I_{D\ (Sillicon\ Limited)}$		161	A





Part Number	Package	Marking
HGB057N15S	TO-263	GB057N15S
HGK057N15S	TO-247	GK057N15S
HGP057N15S	TO-220	GP057N15S

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	161	A
		T_C=100	114	
Drain to Source Voltage	V_{DS}	-	150	V
Gate to Source Voltage	V_{GS}	-	±20	V
Pulsed Drain Current	I_{DM}	-	550	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.4mH, T_C=25	720	mJ
Power Dissipation	P_D	T_C=25	357	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to175	

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Case	$R_{\Theta JC}$	0.42	/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		150	-	-	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}=150V, T_j=25		-	-	1	μA
		V_{GS}=0V, V_{DS}=150V, 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	-	5.3	5.7	mΩ
			TO-247	-	5.4	6	
			TO-220	-	5.5	6	
Transconductance	g_{fs}	V_{DS}=5V, I_D=20A		-	80	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS} Open, f=1MHz		-	2.7	-	Ω

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=75V, f=1MHz	-	6328	-	pF
Output Capacitance	C_{oss}		-	463	-	
Reverse Transfer Capacitance	C_{rss}		-	7.5	-	
Total Gate Charge	Q_g	V_{DD}=75V, I_D=20A, V_{GS}=10V	-	80	-	nC
Gate to Source Charge	Q_{gs}		-	28	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	12	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=75V, I_D=20A, V_{GS}=10V, R_G=10Ω,	-	27	-	ns
Rise time	t_r		-	21	-	
Turn off Delay Time	$t_{d(off)}$		-	38	-	
Fall Time	t_f		-	14	-	

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=75V, I_F=20A, dI_F/dt=100A/μs	-	80	-	ns
Reverse Recovery Charge	Q_{rr}		-	160	-	nC

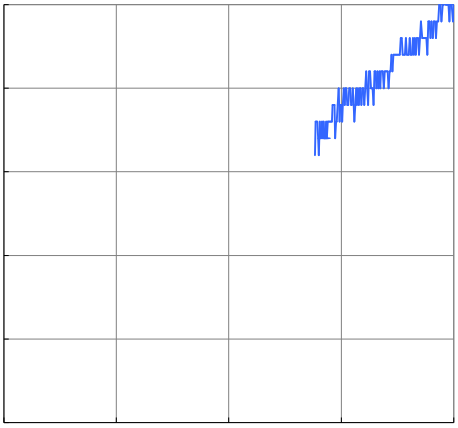
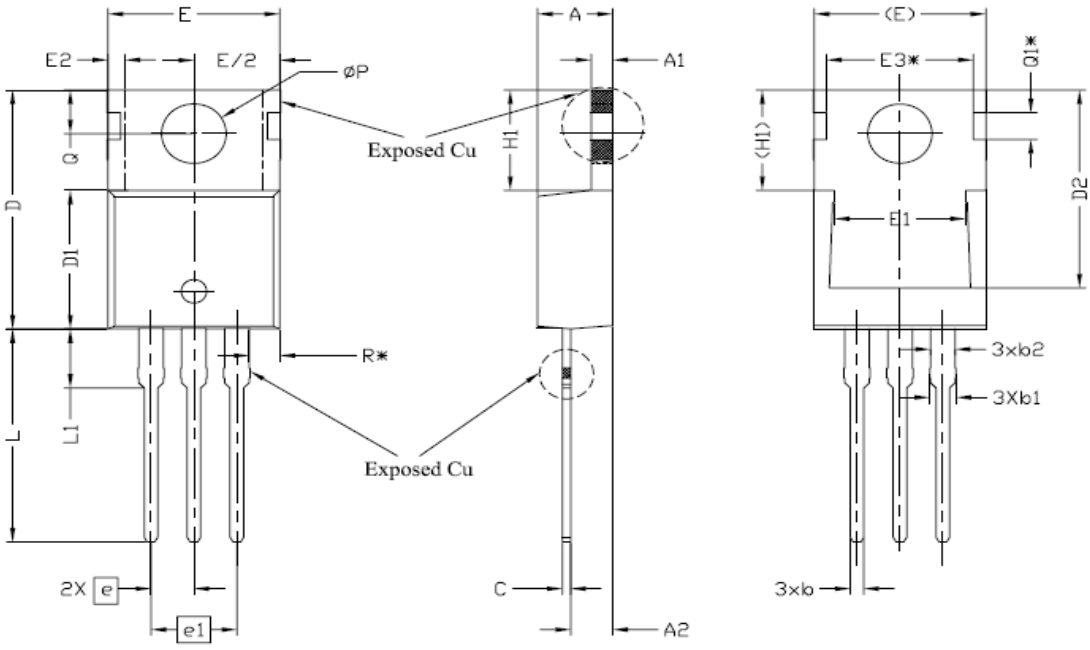
Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage	Figure 8. Typical Capacitance vs. Drain-to-Source Voltage
	

Figure 9. Maximum Safe Operating Area	Figure 10. Maximun Drain Current vs. Case Temperature

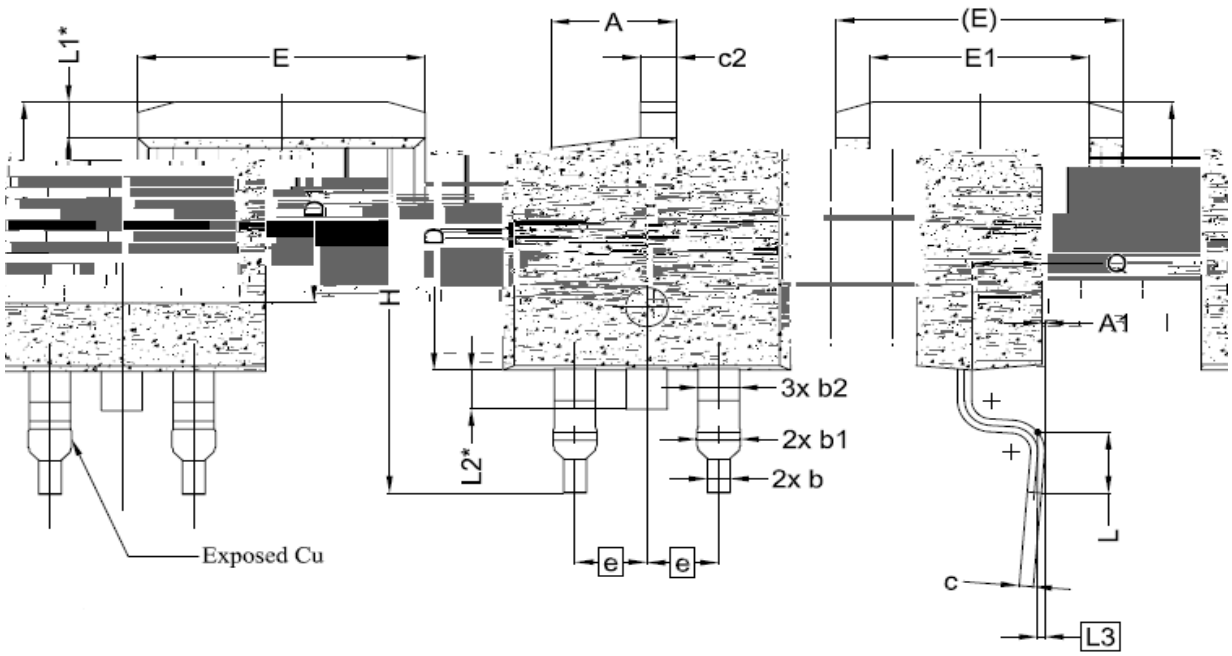
Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case

TO-220, 3 leads



SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4,24	4,44	4,64	
A1	1,15	1,27	1,40	
A2	2,30	2,48	2,70	
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	
D	14,70	15,37	16,00	4
D1	8,82	8,92	9,02	
D2	12,63	12,73	12,83	5
E	9,96	10,16	10,36	4,5
E1	6,86	7,77	8,89	5
E2	-	-	0,76	6
E3*	8,70REF.			
e	2,54BSC			
e1	5,08BSC			
H1	6,30	6,45	6,60	5,6
L	13,47	13,72	13,97	
L1	3,60	3,80	4,00	
ØP	3,75	3,84	3,93	
Q	2,60	2,80	3,00	
Q1*	1,73REF.			
R*	1,82REF.			

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

TO-247, 3 leads