Features

- Super Low Gate Charge
- Green Device Available
- Excellent Cdv/dt effect decline
- Advanced high cell density Trench technology

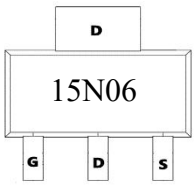
Bvdss	Rdson	ID
60V	28mΩ	15A

Application

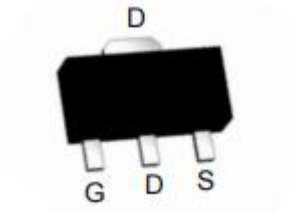
- PWM applications
- Load Switch
- Power management

RoHS

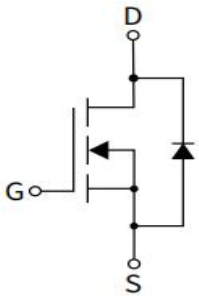
Package



Marking and pin assignment



SOT89-3L top view



Schematic diagram

Package Marking and Ordering Information

Device Marking	Device	Device Package	Quantity
15N06	15N06Q	SOT89-3L	1000

Absolute Maximum Ratings (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current,V_{GS}@10V[1]	I_D@T_A=25℃	15	A
	I_D@T_A=70℃	7.5	A
Pulsed Drain Current[2]	I_{DM}	22	A
Single Pulsed Avalanche Energy[3]	EAS	22	mJ
Avalanche Current	I_{AS}	23	A
Total Power Dissipation[4]	P_D	1.5	W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 ~ 150	℃

Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-to-Case[1]	$R_{\theta JC}$	25	℃/W
Thermal Resistance Junction-to-Ambient[1]	$R_{\theta JA}$	85	℃/W

Ordering Information

Ordering Number	Package	Pin Assignment			Packing
Halogen Free		G	D	S	
HL15N06Q	SOT89-3L	1	2	3	Tape Reel

Electrical Characteristics (T_J=25℃unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	VB_{DSS}	I_D=250uA,V_{GS}=0V	60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V	-	-	1	uA
Gate to Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS},I_D=250uA	1	1.6	2.5	V
Static Drain-Source On-Resistance[3]	$R_{DS(ON)}$	V_{GS}=10V,I_D=15A	-	40	49	mΩ
		V_{GS}=4.5V,I_D=10A	-	45	63	
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V, f=1MHz	-	825	-	pF
Output Capacitance	C_{oss}		-	49	-	
Reverse Transfer Capacitance	C_{rss}		-	41	-	
Total Gate Charge	Q_g	V_{DS}=30V,I_D=4.5A, V_{GS}=10V	-	14	-	nC
Gate-Source Charge	Q_{gs}		-	2.9	-	
Gate-Drain Charge	Q_{gd}		-	5.2	-	
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V,V_{DS}=30V, R_G=3Ω,I_D=2A, VL=6.7Ω	-	5	-	ns
Turn-On Rise Time	t_r		-	2.6	-	
Turn-Off Delay Time	$T_{d(off)}$		-	16.1	-	
Turn-Off Fall Time	t_f		-	2.3	-	
Maximum Continuous Drain to Source Diode Forward Current		I_S	-	-	10	A
Maximum Pulsed Drain to Source Diode Forward Current		I_{SM}	-	-	30	A
Drain to Source Diode Forward Voltage	V_{GS}=0V,I_S=15A	V_{SD}	-	-	1.2	V
Body Diode Reverse Recovery Time	I_F=15A,dI/dt=100A/us	trr	-	35	-	ns
Body Diode Reverse Recovery Charge		Qrr	-	53	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. EAS condition : T_J=25℃,V_{DD}=30V,V_G=10V,L=0.5mH,R_g=25Ω,I_{AS}=6.1A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Performance Characteristics

Figure1: Output Characteristics

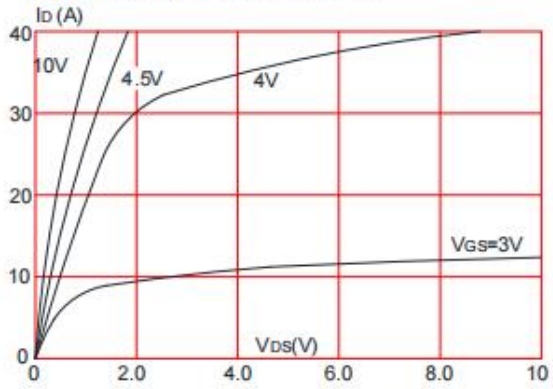


Figure 2: Typical Transfer Characteristics

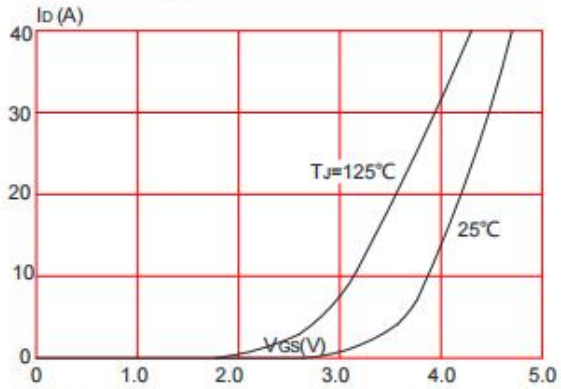


Figure 3: On-resistance vs. Drain Current

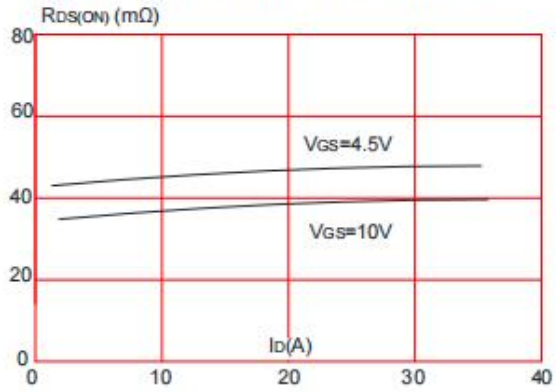


Figure 4: Body Diode Characteristics

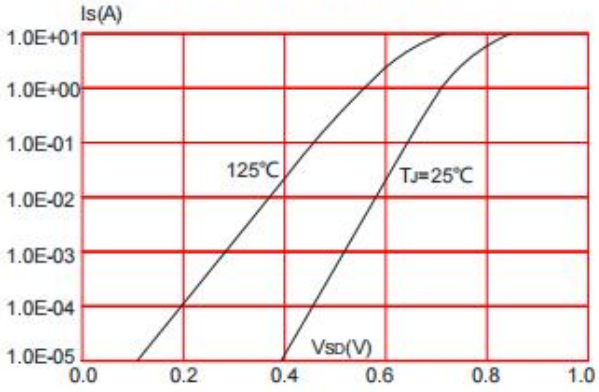


Figure 5: Gate Charge Characteristics

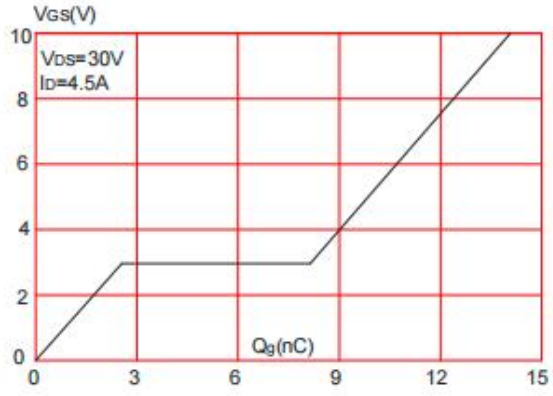


Figure 6: Capacitance Characteristics

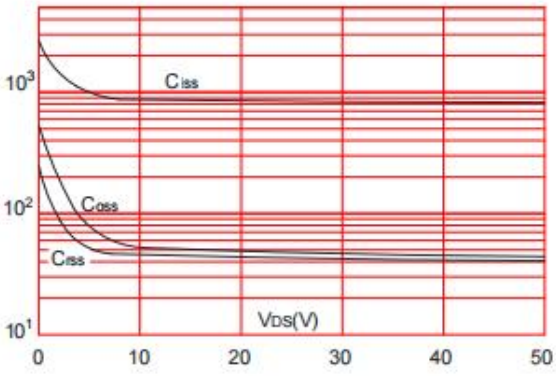


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

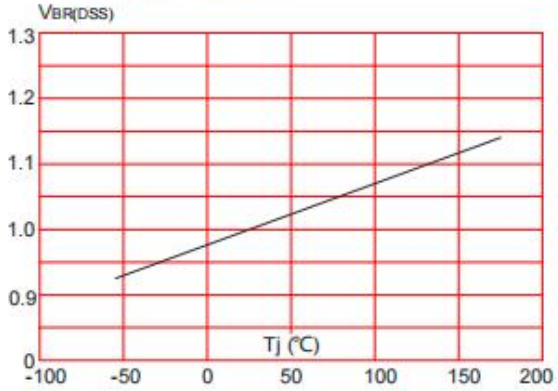


Figure 8: Normalized on Resistance vs. Junction Temperature

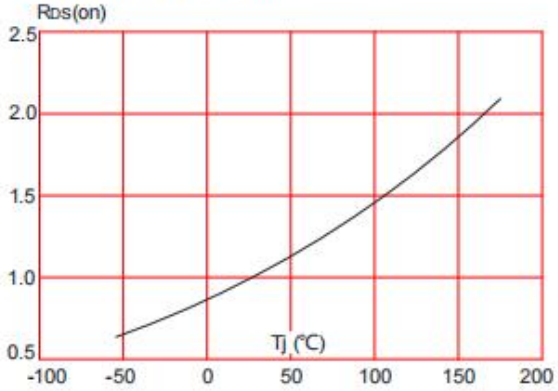


Figure 9: Maximum Safe Operating Area

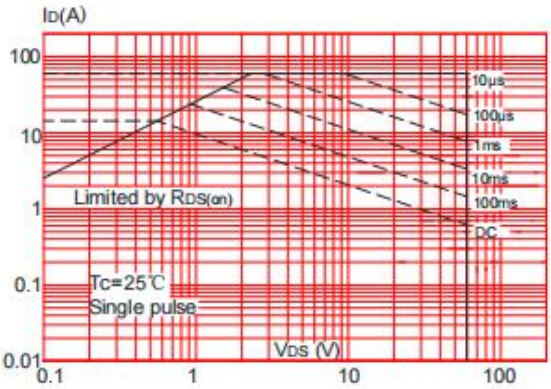


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

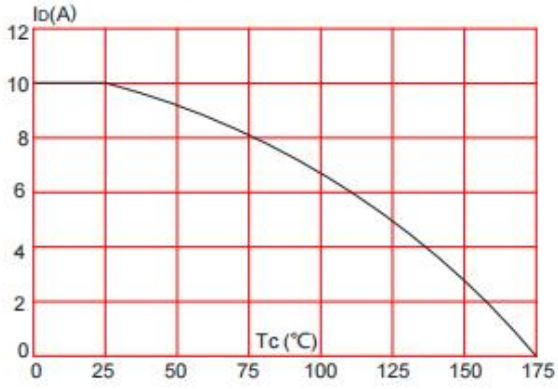
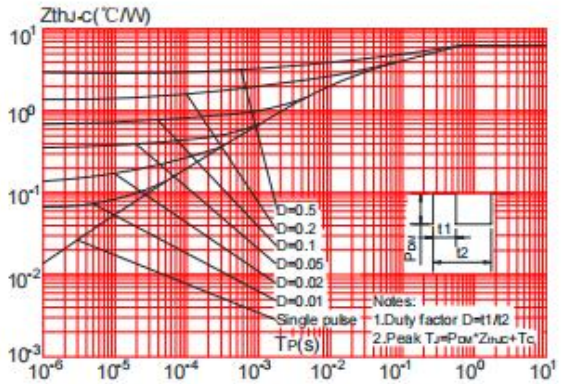
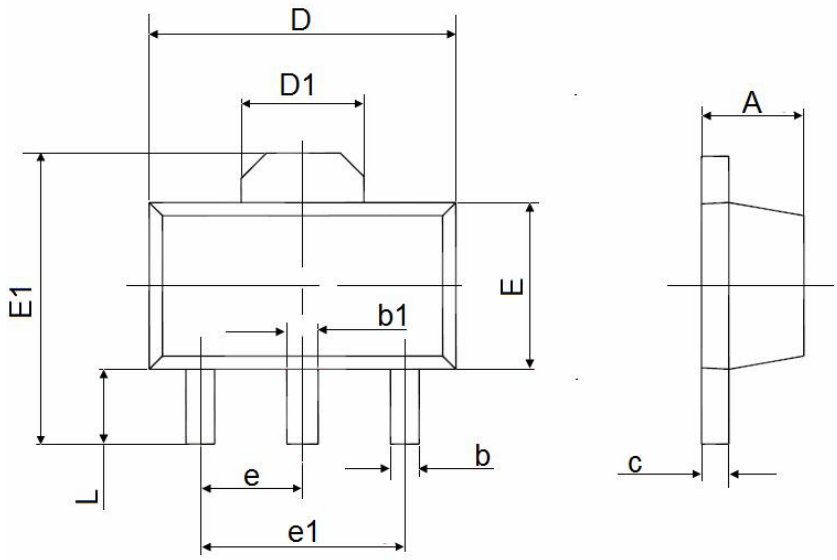


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Package Dimensions SOT89-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

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