
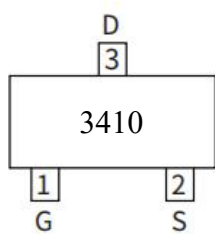

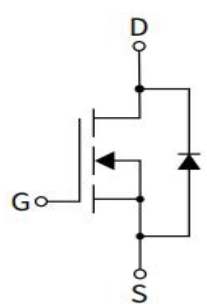




Features	Bvdss	Rdson	ID
	30V	11.8mΩ	7A
<ul style="list-style-type: none"> ➤ Super Low Gate Charge ➤ Green Device Available ➤ Excellent Cdv/dt effect decline ➤ Advanced high cell density Trench technology 	Application		
	<ul style="list-style-type: none"> ➤ Battery protection ➤ Load Switch ➤ Uninterruptible power supply 		
Package			
			
Marking and pin assignment	SOT23-3L top view	Schematic diagram	

Package Marking and Ordering Information

Device Marking	Device	Device Package	Quantity
3410	3410L	SOT23-3L	3000

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current, V _{GS} @10V ¹	I _D @T _A =25°C	7	A
	I _D @T _A =70°C	5.5	A
Pulsed Drain Current ²	I _{DM}	29.4	A
Single Pulse Avalanche Energy	EAS	-	mJ
Total Power Dissipation	P _D	2	W
Storage Temperature Range	T _{STG}	-55 ~ 150	°C
Operating Junction Temperature Range	T _J	-55 ~ 150	°C

Thermal Resistance Ratings

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction-ambient ¹	R _{θJA}	--	85	°C/W
Thermal Resistance Junction-Case ¹	R _{θJC}	--	--	°C/W



Ordering Information

Ordering Number	Package	Pin Assignment			Packing
Halogen Free		G	S	D	
HL3410L	SOT23-3L	1	2	3	Tape Reel

Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	-	-	1	μA
Gate- Source Forward Leakage	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.5	2.5	V
Drain-Source On-State Resistance ²	$R_{DS(on)}$	$V_{GS}=10V, I_D=10A$	-	11.8	26.8	m Ω
		$V_{GS}=4.5V, I_D=5A$	-	16.8	24.8	
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V,$ $f=1MHz$	-	614	-	pF
Output Capacitance	C_{oss}		-	118	-	
Reverse Transfer Capacitance	C_{rss}		-	98	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=15V, R_L=1.35\Omega,$ $R_G=3\Omega, V_{GS}=10V$	-	6	-	nS
Turn-on Rise Time	t_r		-	10	-	
Turn-Off Delay Time	$t_{d(off)}$		-	30	-	
Turn-Off Fall Time	t_f		-	6.5	-	
Total Gate Charge	Q_g	$V_{DS}=15V, I_D=11A,$ $V_{GS}=10V$	-	16	-	nC
Gate-Source Charge	Q_{gs}		-	2.7	-	
Gate-Drain Charge	Q_{gd}		-	4.5	-	
Drain to Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=15A$	-	-	1.2	V
Continuous Source Current	I_S	$V_G=V_D=0V, \text{Force Current}$	-	-	7	A
Reverse Recovery Time	t_{rr}	$I_F=8A, di/dt=100A/\mu s$	-	8	-	nS
Reverse Recovery Charge	Q_{rr}		-	3	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.



Typical Performance Characteristics

Figure 1: Output Characteristics

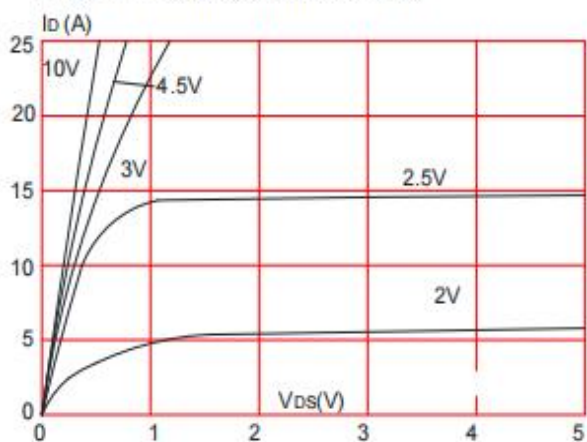


Figure 2: Typical Transfer Characteristics

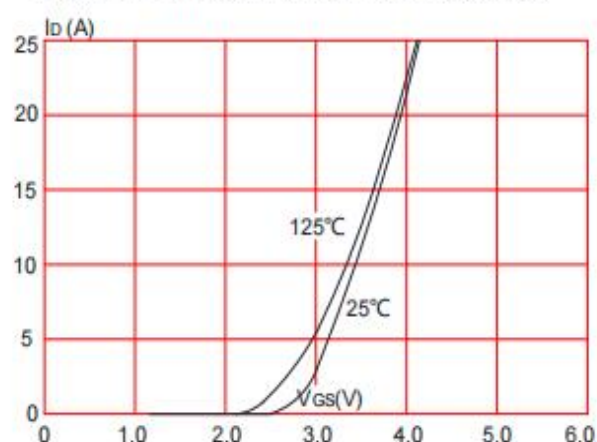


Figure 3: On-resistance vs. Drain Current

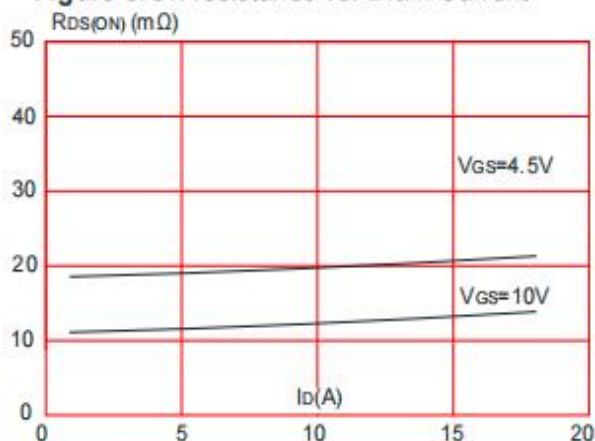


Figure 4: Body Diode Characteristics

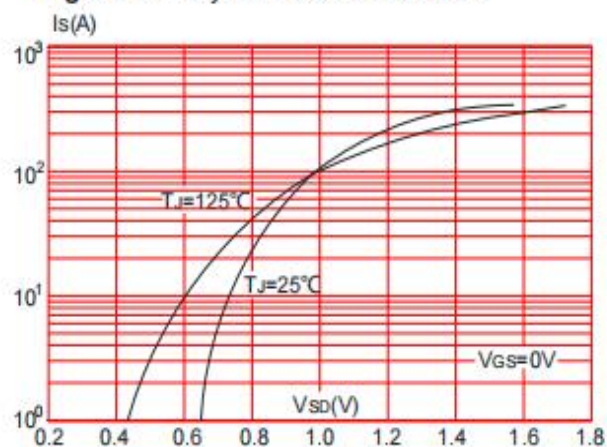


Figure 5: Gate Charge Characteristics

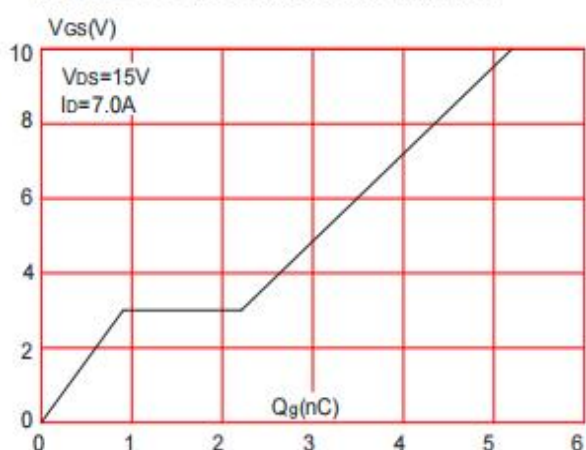


Figure 6: Capacitance Characteristics

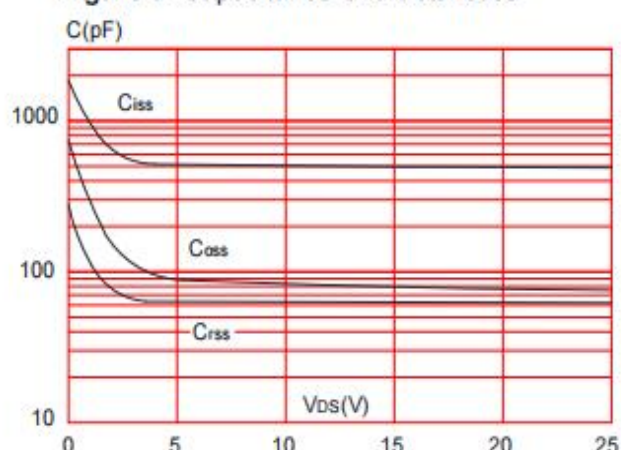




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

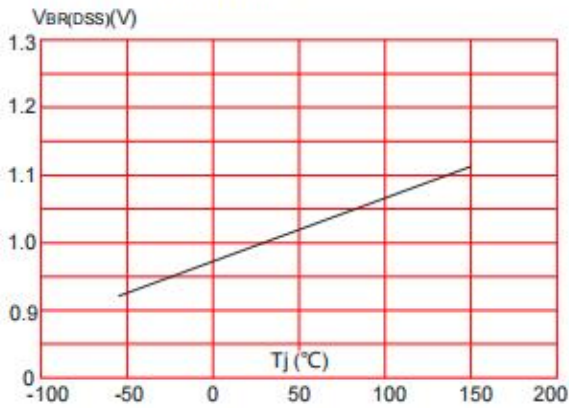


Figure 9: Maximum Safe Operating Area

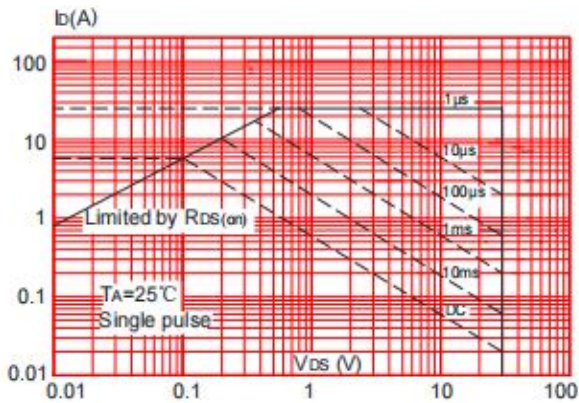


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

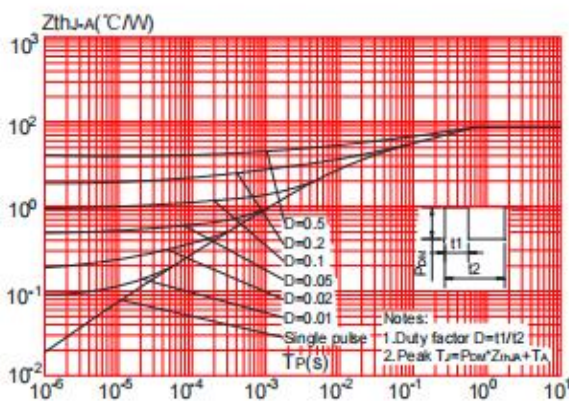


Figure 8: Normalized on Resistance vs. Junction Temperature

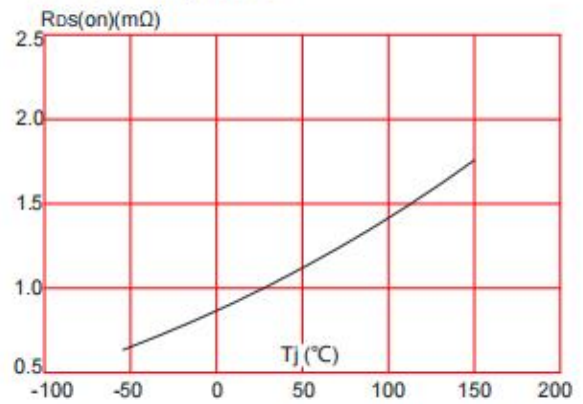
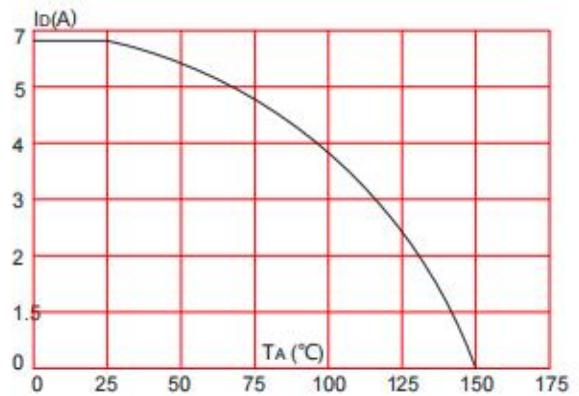
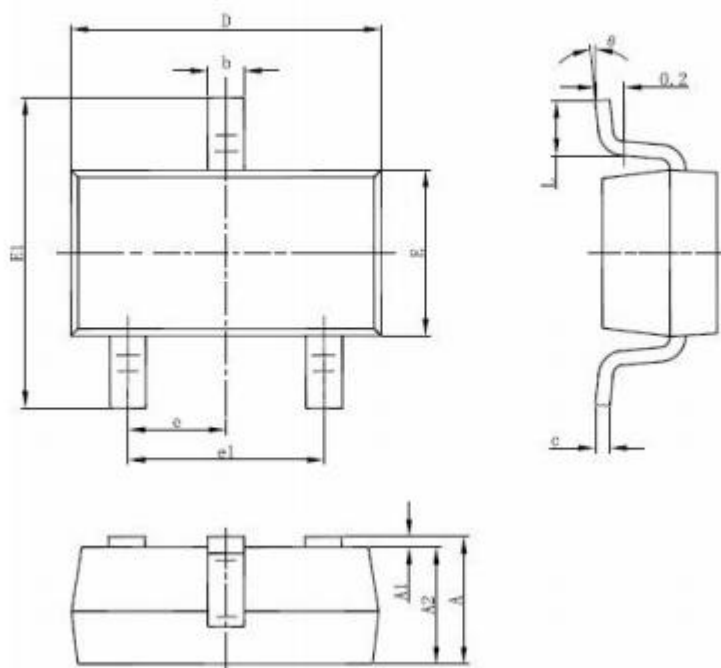


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature





Package Dimensions SOT23-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°



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