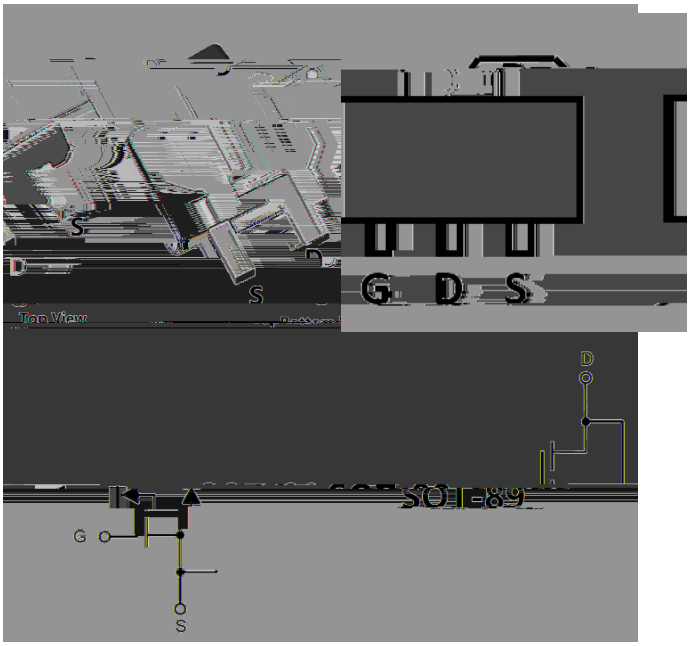
N-Channel Enhancement Mode Field Effect Transistor



Product Summary

- V_{DS} 60V
- I_D 3.5A
- $R_{DS(ON)}$(at V_{GS}= 10V) 100mohm
- $R_{DS(ON)}$(at V_{GS}= 4.5V) 120mohm
- $R_{DS(ON)}$(at V_{GS}= 2.5V) 200mohm

General Description

- Trench Power LV MOSFET technology
- High Density Cell Design for Low $R_{DS(ON)}$
- High Speed switching
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- Battery protection
- Load switch
- Power management

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

Parameter	Symbol	Limit	Unit
Drain-source Voltage	V_{DS}	60	V
Gate-source Voltage	V_{GS}	±16	V
T_A=25		3.5	
Drain Current	I_D		Thermal Resistance Junc
B	$R_{\theta JA}$	74	/ W
Junction and Storage Temperature Range	T_J ,T_{STG}	-55 +150	

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJH03N06B	F1	6003	1000	10000	40000	7“ reel
	F2	6003	1000	8000	32000	7“ reel

■ Electrical Characteristics (T_J=25 unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-250μA	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 60V,V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D= 250μA	0.65	0.95	1.55	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 10V, I_D= 3A		86	100	mΩ
		V_{GS}= 4.5V, I_D= 2A		90	120	
	=	V_{GS}= 2.5V, I_D= 1A		100	200 = 10V.,V	
Diode Forward Voltage	V_{SD}	I_S= 3.0A,V_{GS}=0V		0.8	1.2	V
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=30V,V_{GS}=0V,f=1MHZ		451		pF
Output Capacitance	C_{oss}			38		
Reverse Transfer Capacitance	C_{rss}			31		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}= 10V,V_{DS}= 30V,I_D= 3.0A		13.8		nC
Gate-Source Charge	Q_{gs}			2.2		
Gate-Drain Charge	Q_{gd}			1.9		
Reverse Recovery Chrage	Q_{rr}	I_F= 3A, di/dt=100A/us		7.6		
Reverse Recovery Time	t_{rr}			30		ns

■ Typical Performance Characteristics

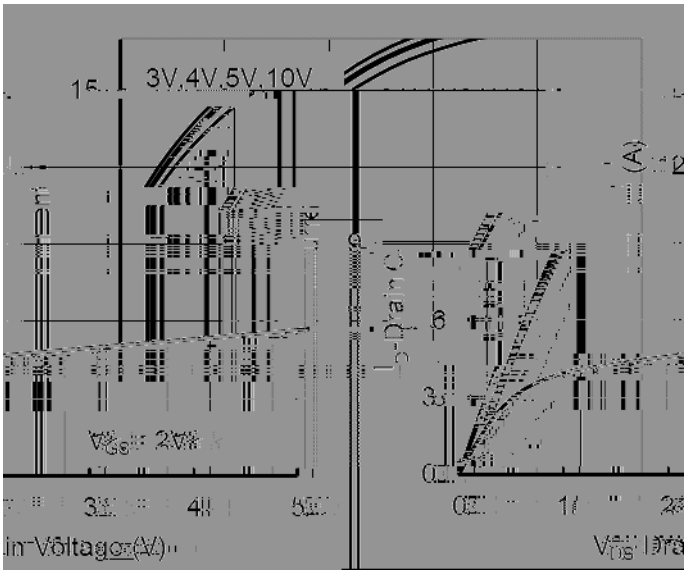


Figure1. Output Characteristics

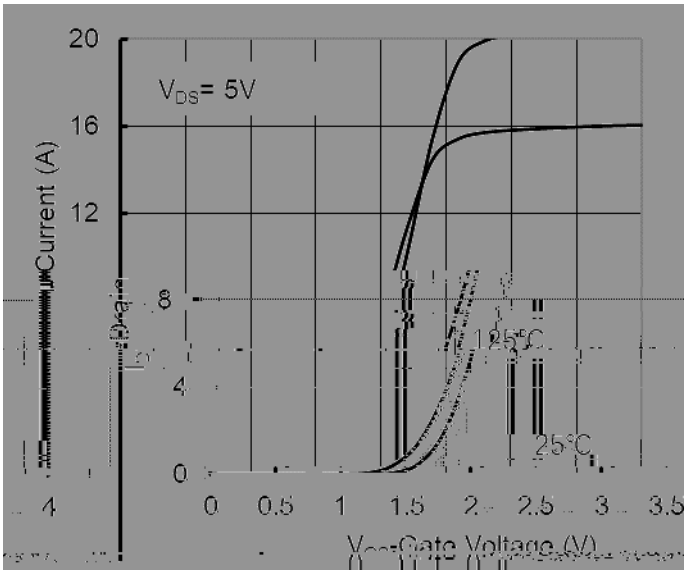


Figure2. Transfer Characteristics

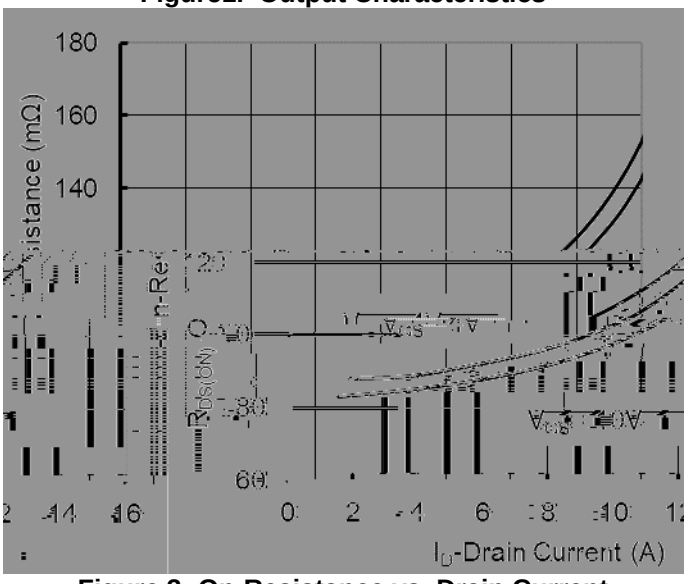


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

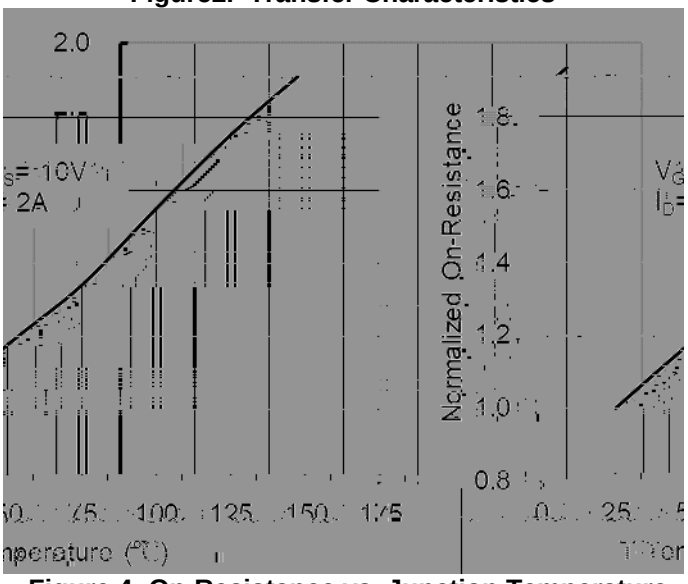


Figure 4: On-Resistance vs. Junction Temperature

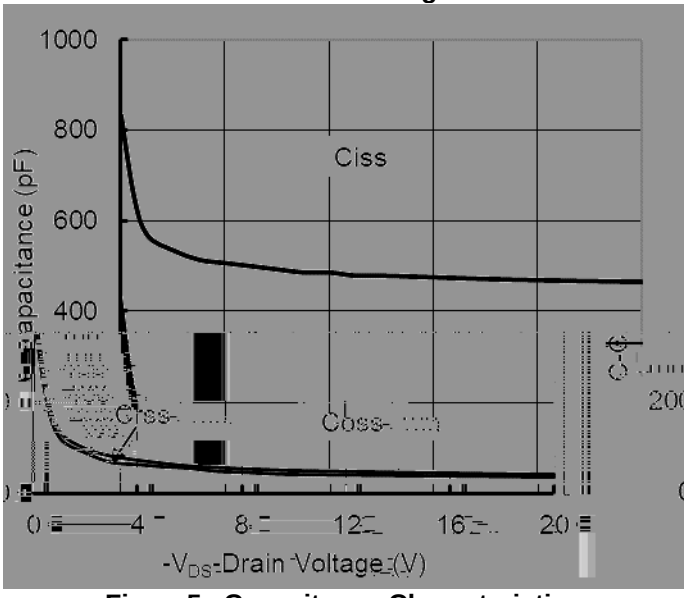


Figure5. Capacitance Characteristics

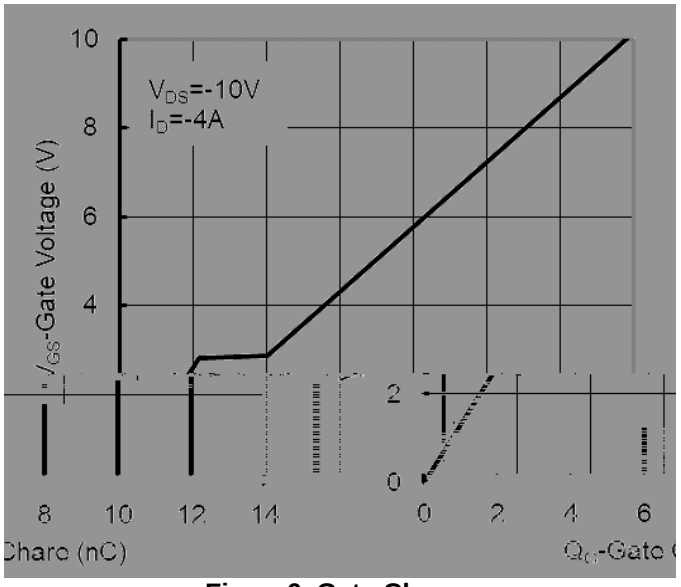
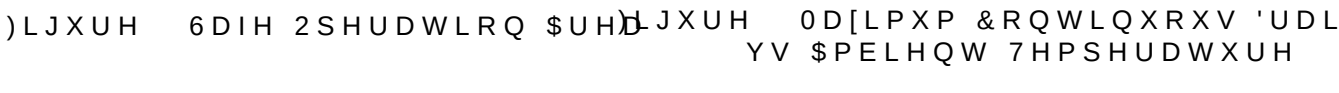


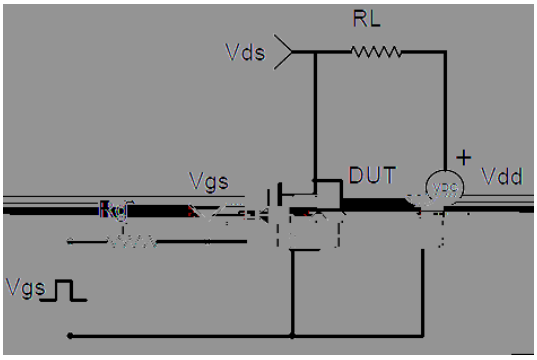
Figure6. Gate Charge

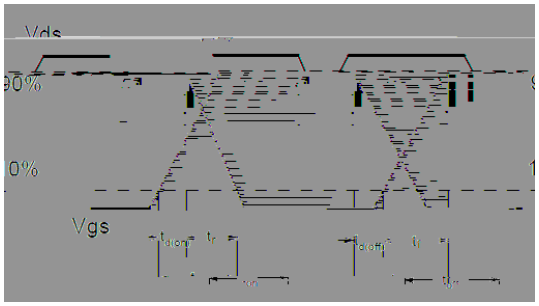


)LJXUH 6DIH 2SHUDWLRQ $UHD

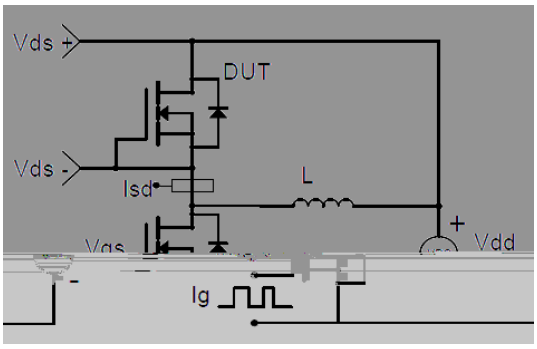
)LJXUH 0D[LPXP &RQWLQXRXV 'UDLQ YV $PELHQW 7HPSHUDWXUH

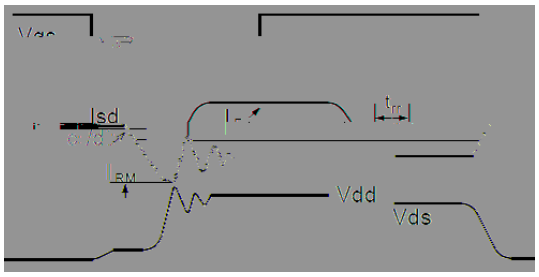
)LJXUH 1RUPDOL]HG 'UDLQ YV $PELHQW 7KHUPDO ,PSHGDQFH



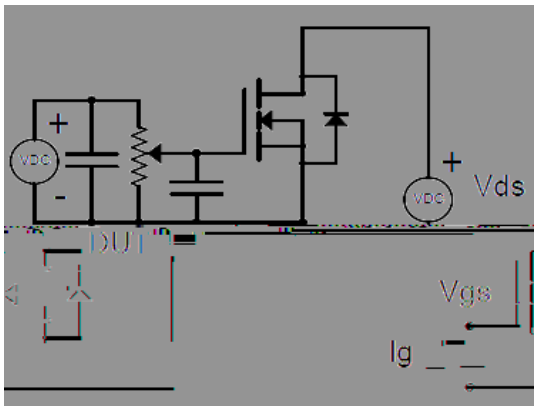


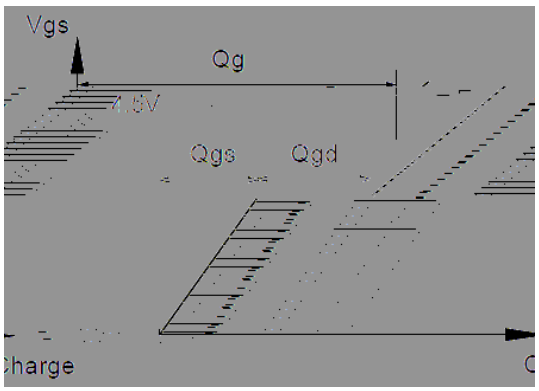
Resistive Switching Test Circuit & Waveforms



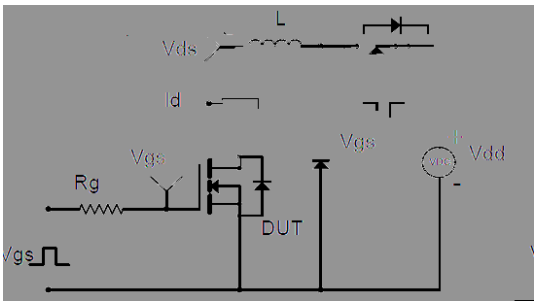


Diode Recovery Test Circuit & Waveforms





Gate Charge Test Circuit & Waveform



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

■ SOT-89 Package Information

TYPE A(PACKING CODE:F1):