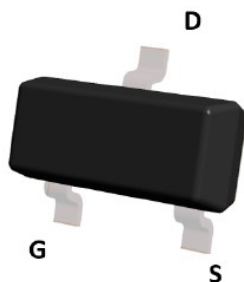


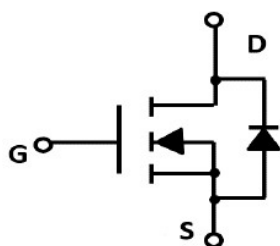
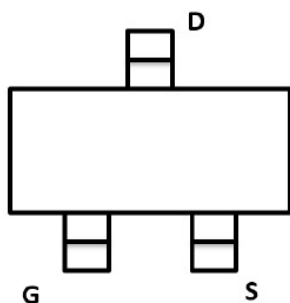


N-Channel Enhancement Mode Field Effect Transistor



Top View

SOT-23



Product Summary

● V_{DS}	40V
● I_D	5.0A
● $R_{DS(ON)}$ (at $V_{GS}=10V$)	< 45mohm
● $R_{DS(ON)}$ (at $V_{GS}=4.5V$)	< 60mohm
● 100% V_{DS} Tested	

General Description

- Trench Power LV MOSFET technology
- High Power and current handling capability
- AEC-Q101 qualified

Applications

- PWM application
- Load switch

■ Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	40	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_A=25^{\circ}\text{C}$	I_D	5	A
	$T_A=70^{\circ}\text{C}$		4	
Pulsed Drain Current ^A		I_{DM}	20	A
Total Power Dissipation	$T_A=25^{\circ}\text{C}$	P_D	1.2	W
	$T_A=70^{\circ}\text{C}$		0.8	W
Thermal Resistance Junction-to-Ambient ^B		$R_{\theta JA}$	104	$^{\circ}\text{C}/\text{W}$
Junction and Storage Temperature Range		T_J, T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
FTK05N04C	F2	05N04C.	3000	30000	120000	7" reel



FTK05N04C

■ Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V,V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS1}	V _{GS} =± 20V, V _{DS} =0V			± 100	nA
	I _{GSS2}	V _{GS} =± 10V, V _{DS} =0V			± 50	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	1.0	1.5	2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =5A		30	45	mΩ
		V _{GS} =4.5V, I _D =3A		40	60	
Diode Forward Voltage	V _{SD}	I _S =5A,V _{GS} =0V			1.2	V
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =10V,V _{GS} =0V,f=1MHZ		417		pF
Output Capacitance	C _{oss}			73		
Reverse Transfer Capacitance	C _{rss}			59		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V,V _{DS} =20V,I _D =3.5A		9.76		nC
Gate-Source Charge	Q _{gs}			1.85		
Gate-Drain Charge	Q _{gd}			2.14		
Reverse Recovery Chrage	Q _{rr}	I _F =3.5A, di/dt=100A/us		2.6		ns
Reverse Recovery Time	t _{rr}			19.1		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DS} =20V, I _D =3.5A R _{GEN} =3Ω		4.4		
Turn-on Rise Time	t _r			21		
Turn-off Delay Time	t _{D(off)}			12		
Turn-off fall Time	t _f			19.6		

A. Pulse Test: Pulse Width≤300us, Duty cycle ≤2%.

B. R_{θJA} is the sum of the junction-to-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins. R_{θJC} is guaranteed by design, while R_{θJA} is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.

Typical Performance Characteristics

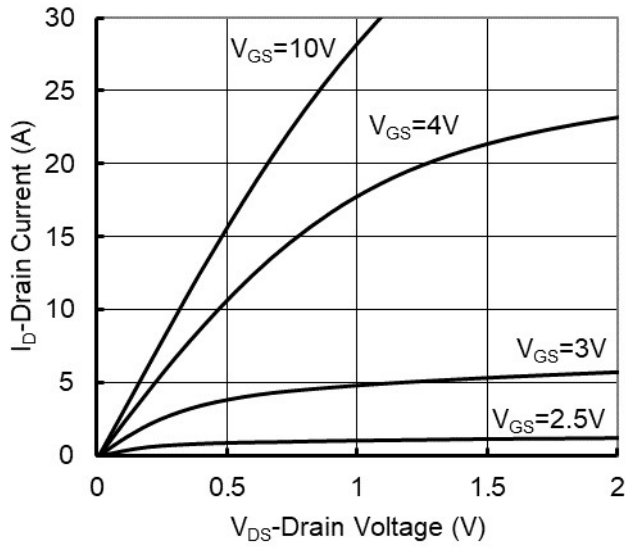


Figure1. Output Characteristics

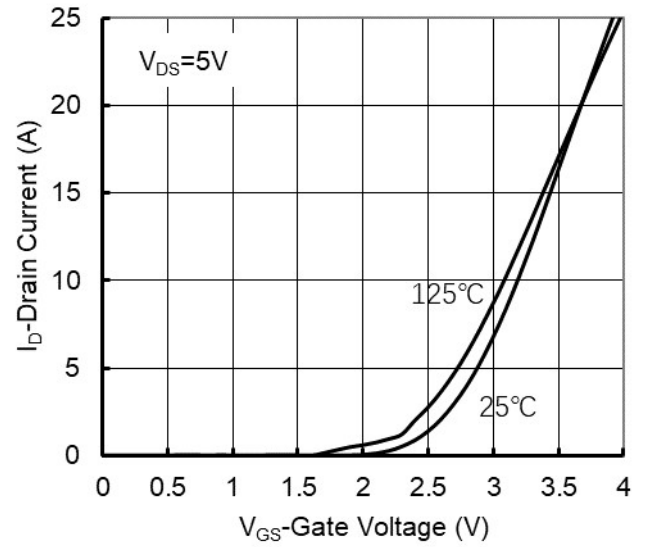


Figure2. Transfer Characteristics

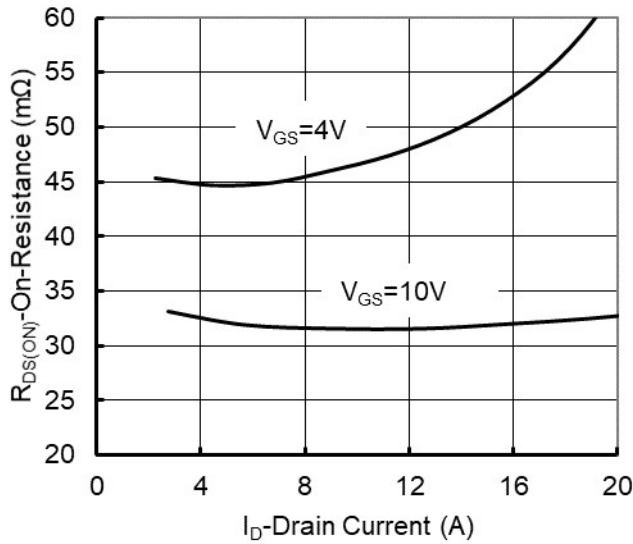


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

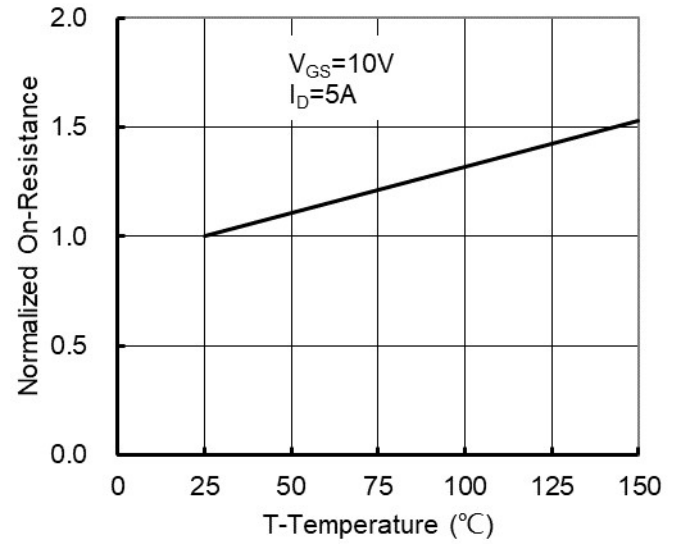


Figure 4: On-Resistance vs. Junction Temperature

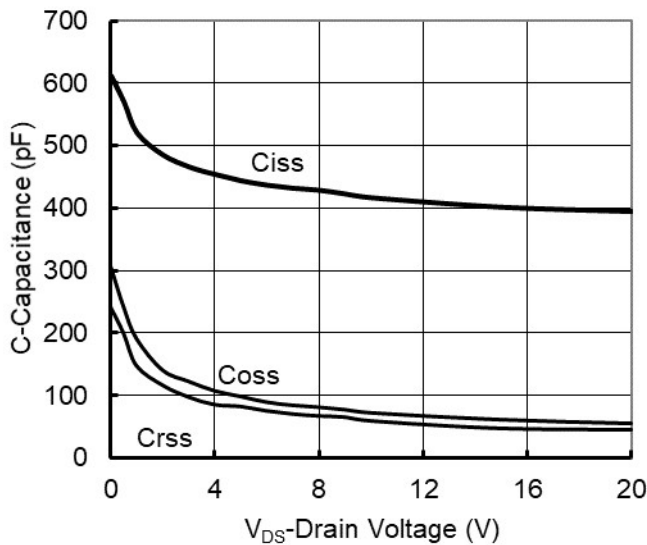


Figure 5. Capacitance Characteristics

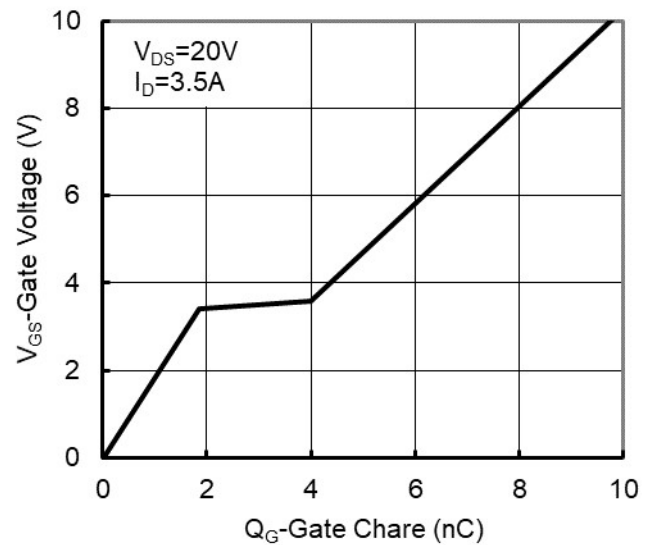
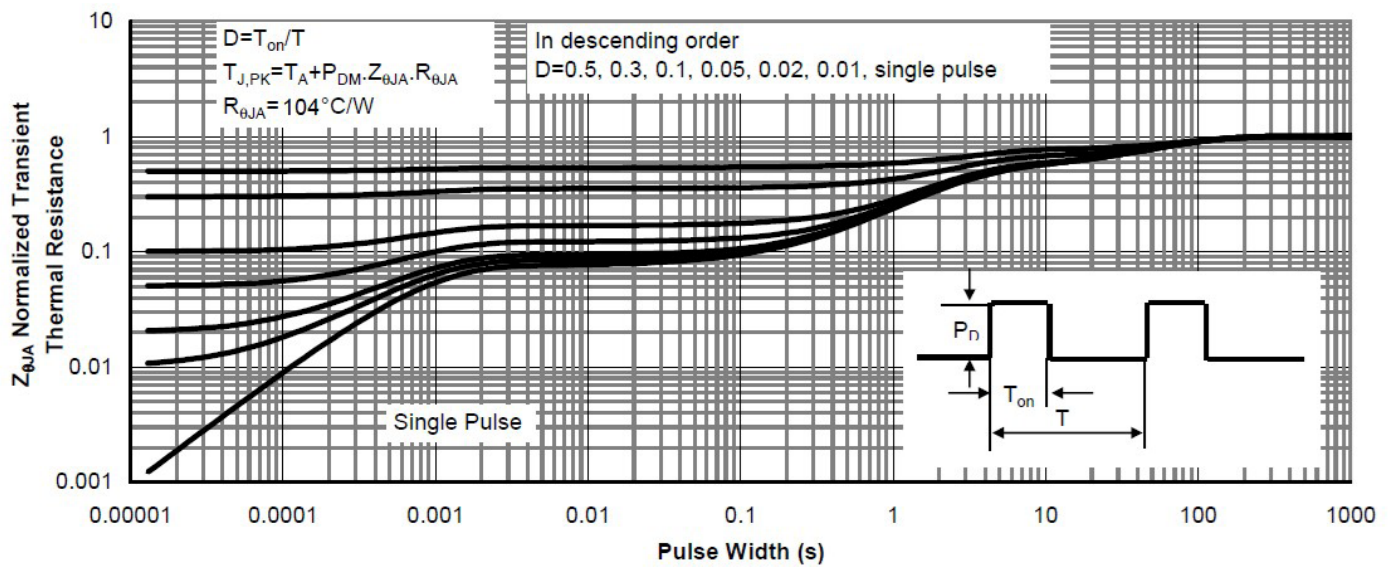
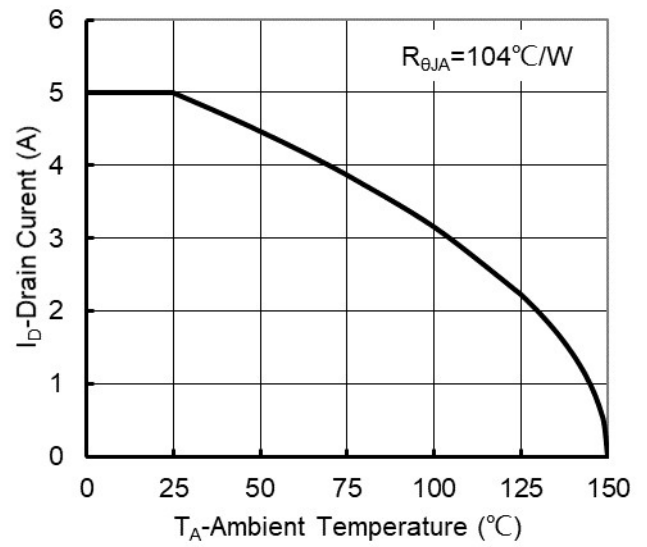
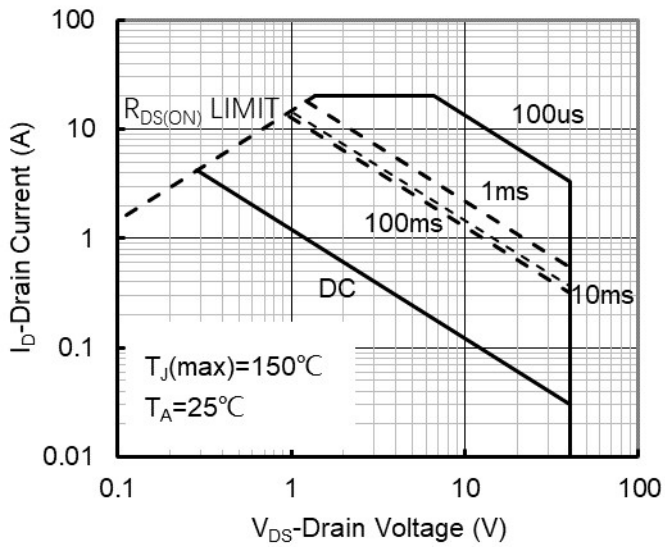
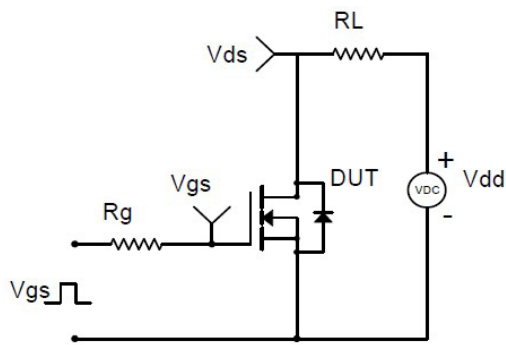
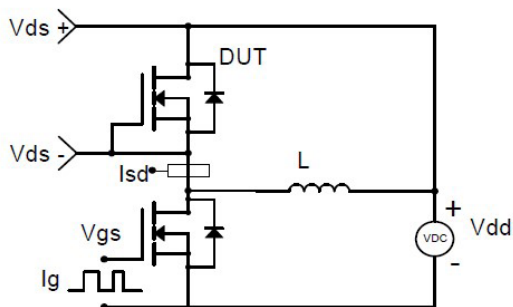
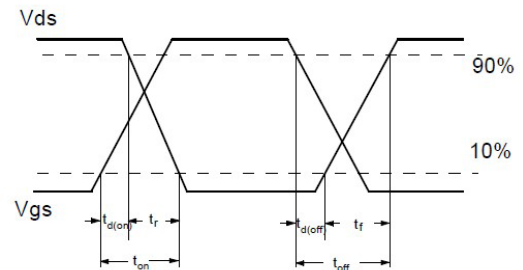


Figure 6. Gate Charge

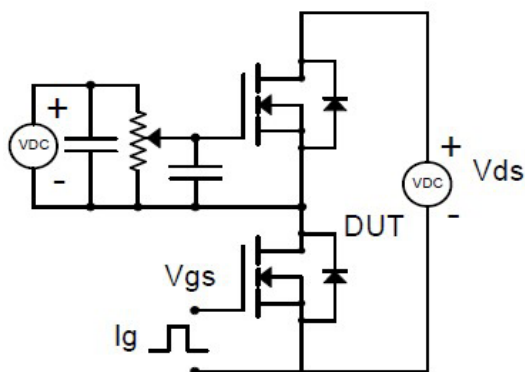
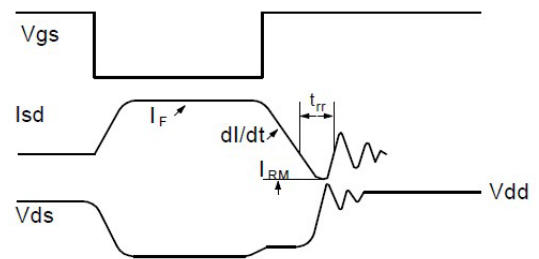




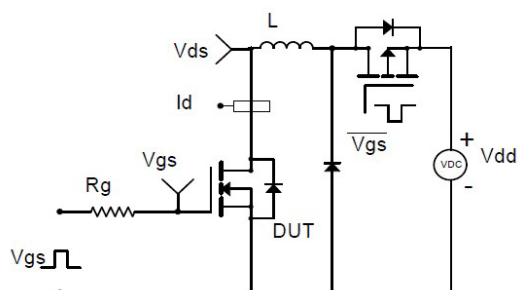
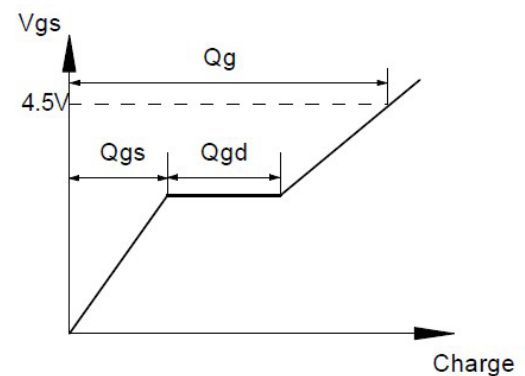
Resistive Switching Test Circuit & Waveforms



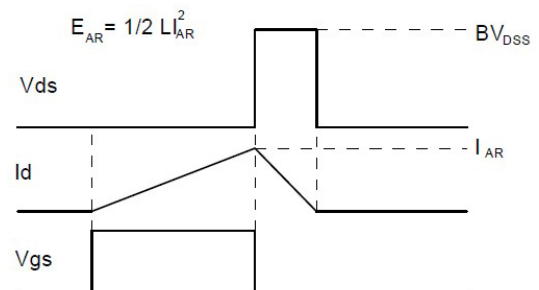
Diode Recovery Test Circuit & Waveforms



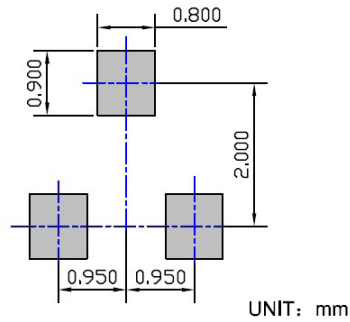
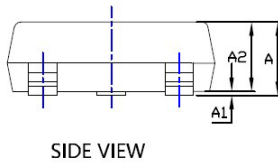
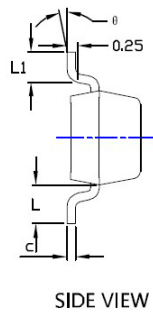
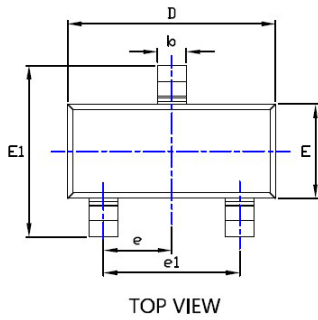
Gate Charge Test Circuit & Waveform



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



■ SOT-23 Package information



SYMBOL	DIMENSIONS					
	INCHES			Millimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.035	---	0.045	0.900	---	1.150
A1	0.000	---	0.004	0.000	---	0.100
A2	0.035	0.038	0.041	0.900	0.975	1.050
b	0.012	0.016	0.020	0.300	0.400	0.500
c	0.004	---	0.008	0.100	---	0.200
D	0.110	0.114	0.118	2.800	2.900	3.000
E	0.047	0.051	0.055	1.200	1.300	1.400
E1	0.089	0.094	0.100	2.250	2.400	2.550
e	0.037TYP			0.950TYP		
e1	0.071	0.075	0.079	1.800	1.900	2.000
L	0.022REF			0.550REF		
L1	0.012	0.016	0.200	0.300	0.400	0.500
θ	0°	---	8°	0°	---	8°

NOTE:

- 1.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
- 2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
- 3.THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.