

• General Description

The TF3008 combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.

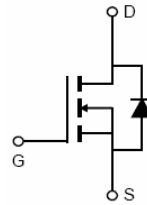
• Features

Advance high cell density Trench technology
Low $R_{DS(ON)}$ to minimize conductive loss
Low Gate Charge for fast switching
Low Thermal resistance

• Application

Load Switches
Power management
Battery protection
BLDC Motor driver

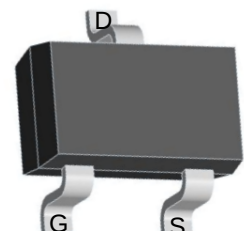
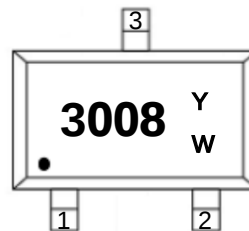
• Product Summary



$$V_{DS}=30V \quad I_D=8.0A$$

$$R_{DS(ON)(10V \text{ typ})}=14.0m\Omega$$

$$R_{DS(ON)(4.5V \text{ typ})}=18.0m\Omega$$



SOT23-3L

• Ordering Information:

Part NO.	TF3008
Marking1	3008:TF3008;
Marking2	Y:year; W:week
Basic ordering unit (pcs)	3000

• Absolute Maximum Ratings ($T_C=25^\circ C$)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_{D@T_C=25^\circ C}$	8.0	A
	$I_{D@T_C=75^\circ C}$	5.6	A
	$I_{D@T_C=100^\circ C}$	4.8	A
Pulsed Drain Current ^①	I_{DM}	24	A
Total Power Dissipation ^②	$P_D@T_C=25^\circ C$	1.2	W
Total Power Dissipation	$P_D@T_A=25^\circ C$	0.2	W
Operating Junction Temperature	T_J	-55 to 150	$^\circ C$
Storage Temperature	T_{STG}	-55 to 150	$^\circ C$

●Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case ^②	R_{thJC}	-	-	15	° C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	78	° C/W
Soldering temperature, wavesoldering for 8s	T_{sold}	-	-	265	° C

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\mu A$	1.00	1.50	1.90	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = 30V, V_{GS} = 0V$			1.0	μA
Gate- Source Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 7.0A$		14.0	17.0	m Ω
		$V_{GS} = 4.5V, I_D = 5.0A$		18.0	23.0	m Ω
Forward Transconductance	g_{FS}	$V_{DS} = 10V, I_D = 5.0A$		10		S
Source-drain voltage	V_{SD}	$I_S = 7.0A$		0.83	1.00	V

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C_{iss}	$V_{DS} = 15V, V_{GS} = 0V$ $f = 1MHz$	-	628	-	pF
Output capacitance	C_{oss}		-	88.7	-	
Reverse transfer capacitance	C_{rss}		-	72.5	-	

●Gate Charge characteristics($T_a = 25^\circ C$)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q_g	$V_{DD} = 15V$ $I_D = 7.0A$ $V_{GS} = 10V$	-	15.5	-	nC
Gate - Source charge	Q_{gs}		-	3.25	-	
Gate - Drain charge	Q_{gd}		-	2.14	-	

Note:

① Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$;

② Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate;

Typical Electrical and Thermal Characteristics

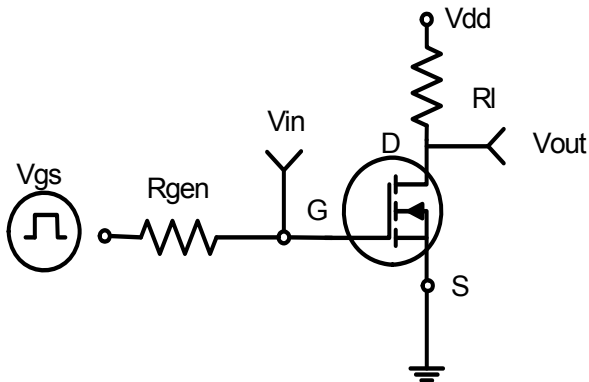


Figure 1 Switching Test Circuit

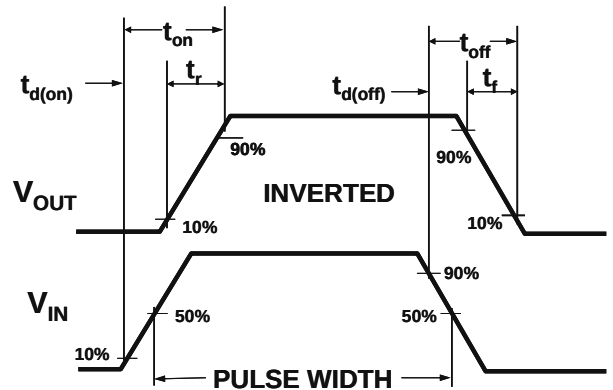


Figure 2 Switching Waveforms

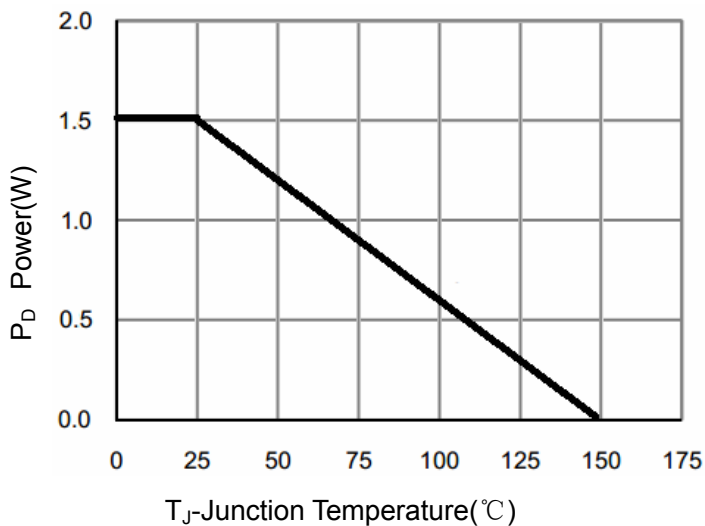


Figure 3 Power Dissipation

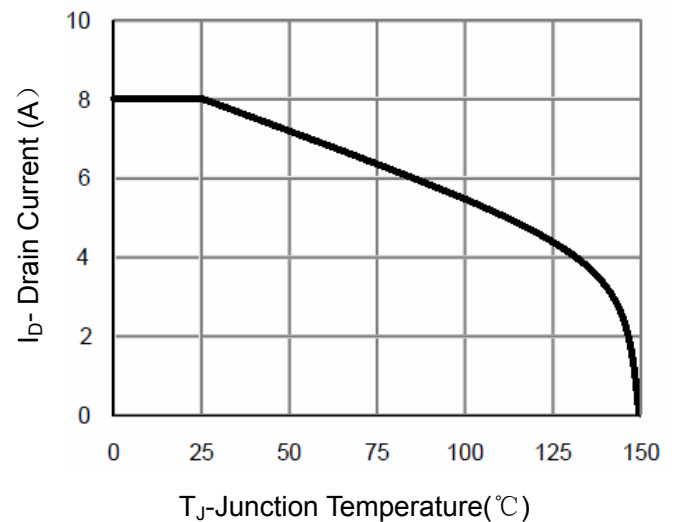


Figure 4 Drain Current

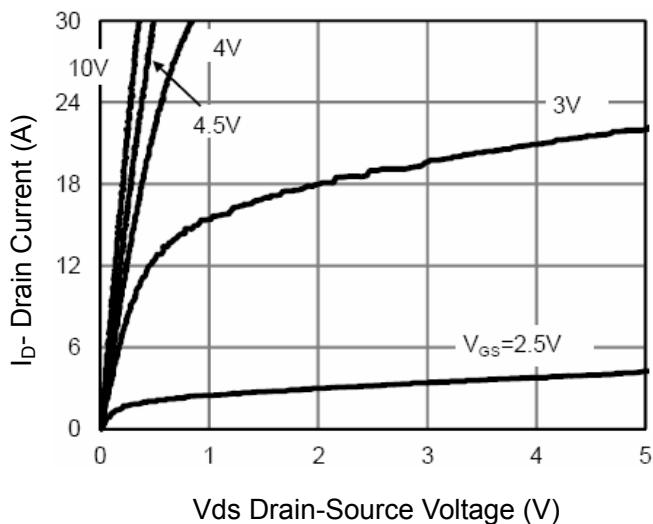


Figure 5 Output Characteristics

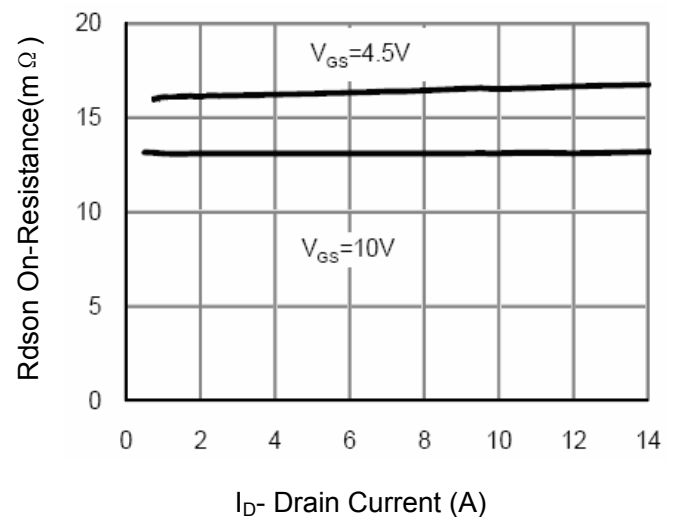


Figure 6 Drain-Source On-Resistance

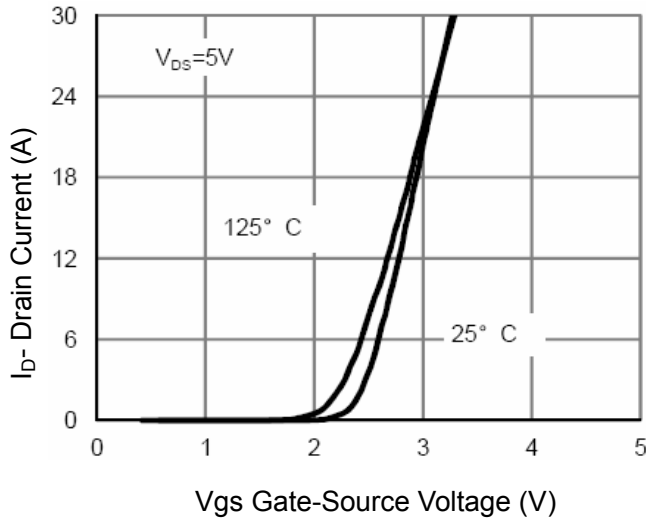


Figure 7 Transfer Characteristics

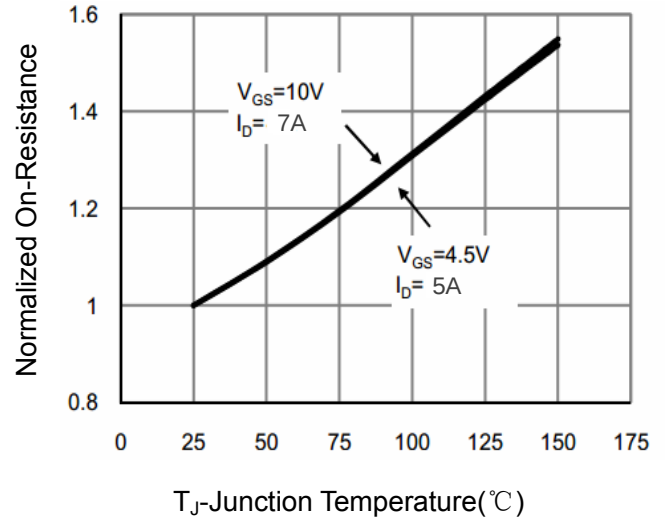


Figure 8 Drain-Source On-Resistance

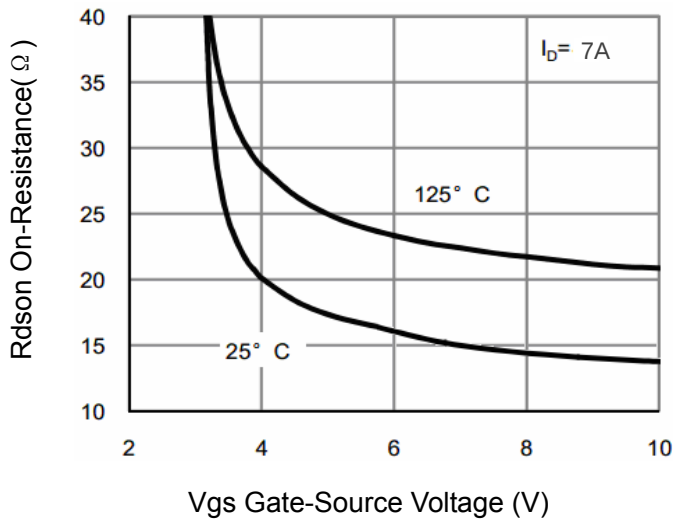


Figure 9 Rdson vs Vgs

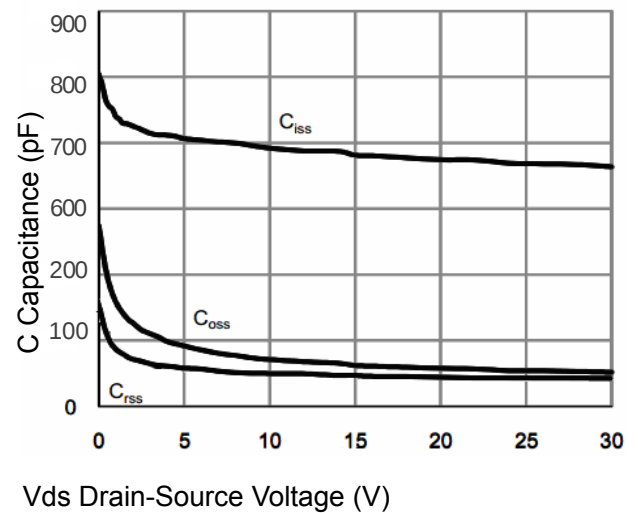


Figure 10 Capacitance vs Vds

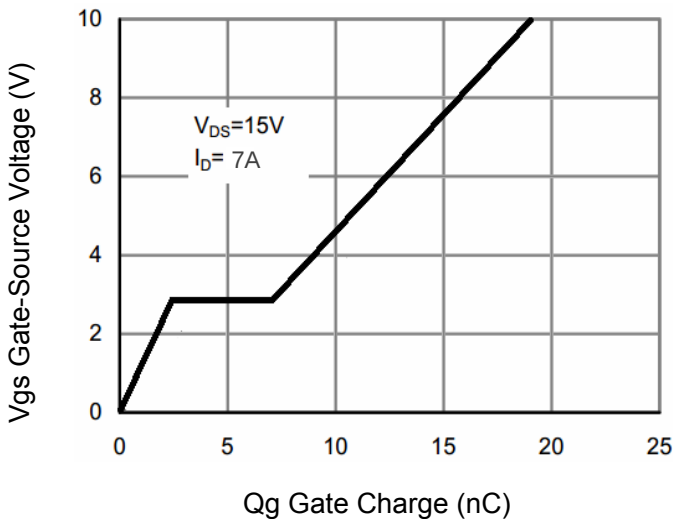


Figure 11 Gate Charge

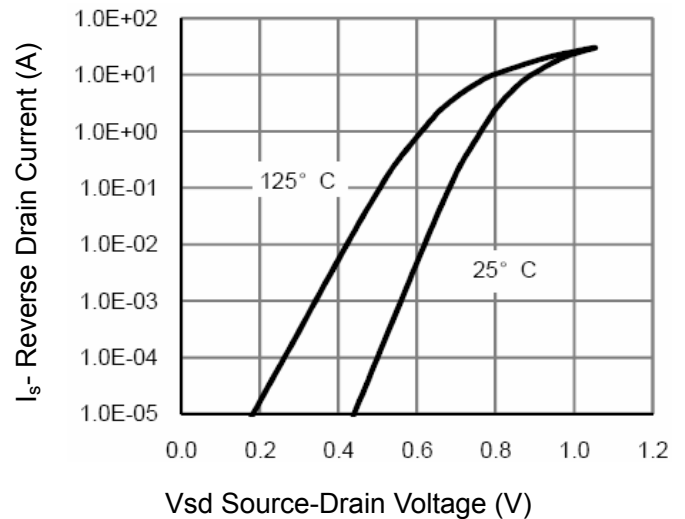
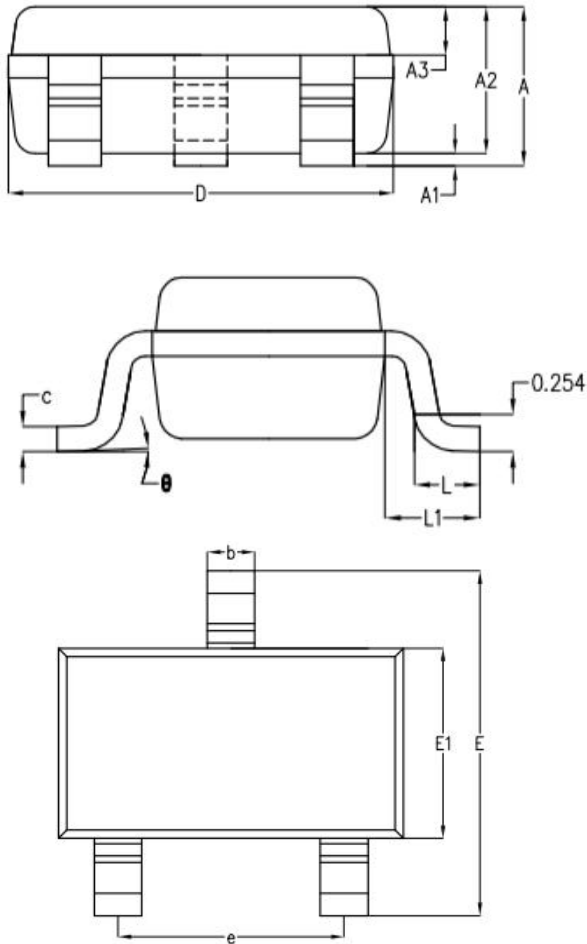


Figure 12 Source- Drain Diode Forward

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SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	1.19	1.24
A1	—	0.05	0.09
A2	1.05	1.10	1.15
A3	0.31	0.36	0.41
b	0.35	0.40	0.45
c	0.12	0.17	0.22
D	2.85	2.90	2.95
E	2.80	2.90	3.00
E1	1.55	1.60	1.65
e	1.90BSC		
L	0.37	0.45	0.53
L1	0.65BSC		
θ	0°	2°	8°