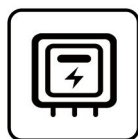


TDSiEMIC

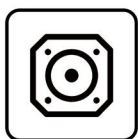
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自主封測 品質把控 售後保障

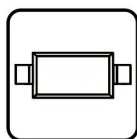
WEB | WWW.TDSEMIC.COM



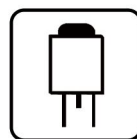
電源管理



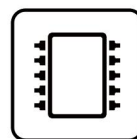
顯示驅動



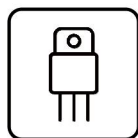
二三極管



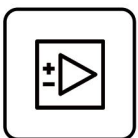
LDO穩壓器



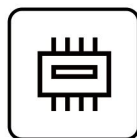
觸摸芯片



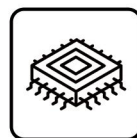
MOS管



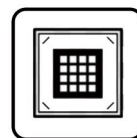
運算放大器



存儲芯片



MCU



串口通信

3400LY-TD

產品規格說明書

General Description

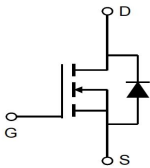
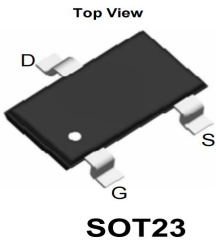
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge

Features

- 30V, 5A
- $R_{DS(ON)}$ Typ = 22m Ω @ V_{GS} = 10V
- $R_{DS(ON)}$ Typ = 24m Ω @ V_{GS} = 4.5V
- $R_{DS(ON)}$ Typ = 29m Ω @ V_{GS} = 2.5V

Applications

- Load Switch
- PWM Application
- Power Management



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

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		30	V
V_{GS}	Gate-to-Source Voltage		± 12	V
I_D	Continuous Drain Current	$T_A = 25^\circ\text{C}$	5	A
		$T_A = 100^\circ\text{C}$	3	
I_{DM}	Pulsed Drain Current ⁽¹⁾		20	A
P_D	Power Dissipation	$T_A = 25^\circ\text{C}$	1.2	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ⁽²⁾		104	$^\circ\text{C/W}$
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	$^\circ\text{C}$

Electrical Characteristics (T_J = 25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	I _D = 250μA, V _{GS} = 0V	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 30V, V _{GS} = 0V	-	-	1.0	μA
I _{GSS}	Gate-Body Leakage Current	V _{DS} = 0V, V _{GS} = ±12V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	0.45	0.8	1.25	V
R _{DS(ON)}	Static Drain-Source ON-Resistance ⁽³⁾	V _{GS} = 10V, I _D = 3A	-	22	28	mΩ
		V _{GS} = 4.5V, I _D = 2A	-	24	31	
		V _{GS} = 2.5V, I _D = 1A	-	29	39	
		Dynamic Characteristics				
C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = 15V, f = 1MHz	-	508	-	pF
C _{oss}	Output Capacitance		-	48	-	pF
C _{rss}	Reverse Transfer Capacitance		-	41	-	pF
Q _g	Total Gate Charge	V _{GS} = 0 to 4.5V V _{DS} = 15V, I _D = 3A	-	7	-	nC
Q _{gs}	Gate Source Charge		-	1.7	-	nC
Q _{gd}	Gate Drain("Miller") Charge		-	1.6	-	nC
Switching Characteristics						
t _{d(on)}	Turn-On DelayTime	V _{GS} = 4.5V, V _{DD} = 15V I _D = 3A, R _{GEN} = 3Ω	-	4	-	ns
t _r	Turn-On Rise Time		-	17	-	ns
t _{d(off)}	Turn-Off DelayTime		-	95	-	ns
t _f	Turn-Off Fall Time		-	37	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	5	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	20	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S = 3A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I _F = 3A, di/dt = 100A/us	-	6.7	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	2.3	-	nC

Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. R_{θJA} is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 0.5%.

Typical Performance Characteristics

Figure 1: Output Characteristics

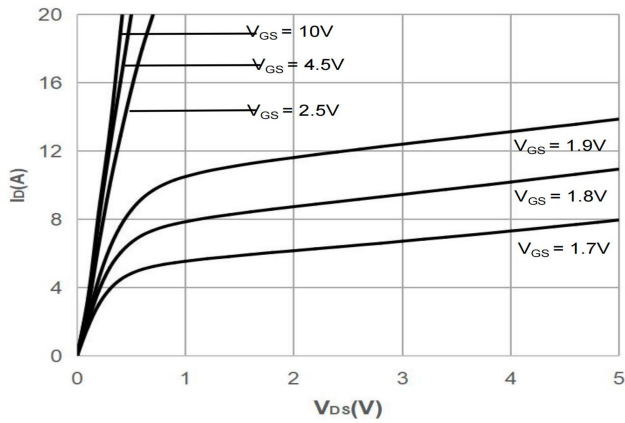


Figure 2: Typical Transfer Characteristics

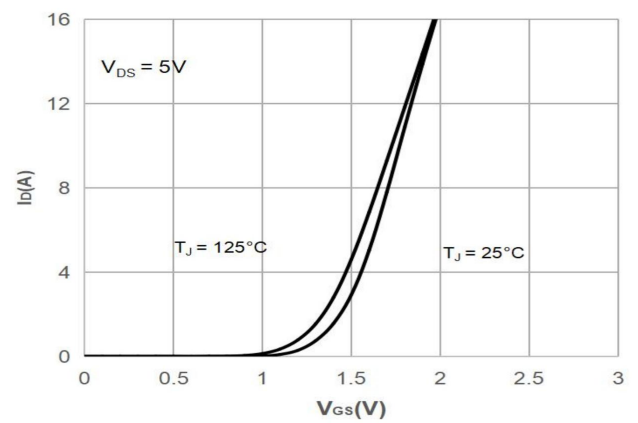


Figure 3: On-resistance vs. Drain Current

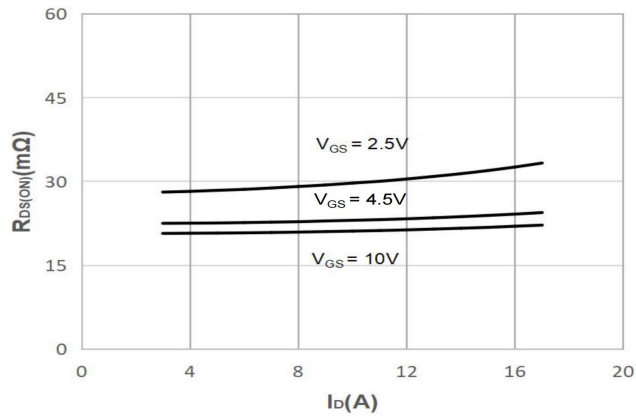


Figure 4: Body Diode Characteristics

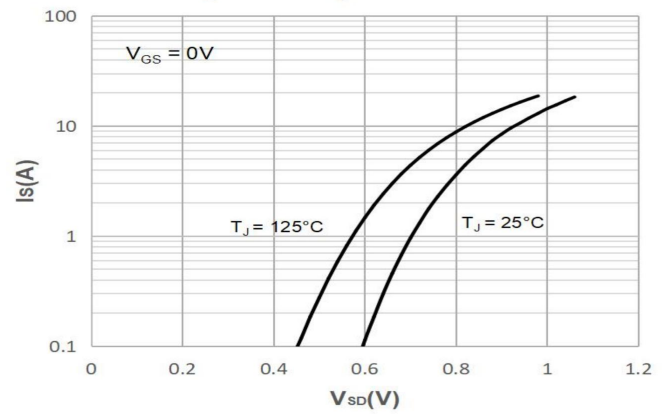


Figure 5: Gate Charge Characteristics

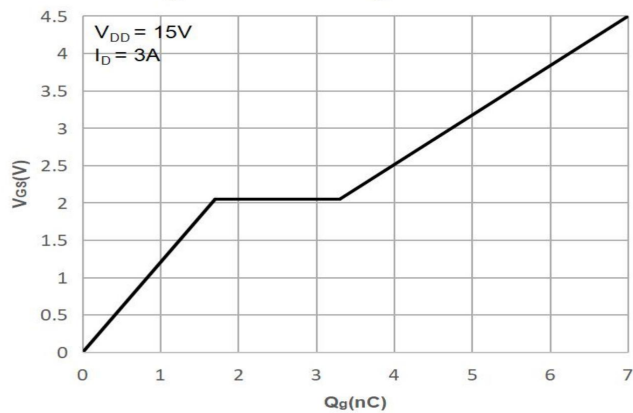
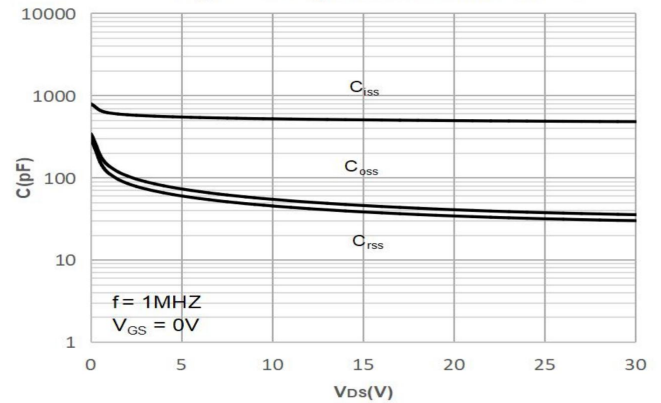


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

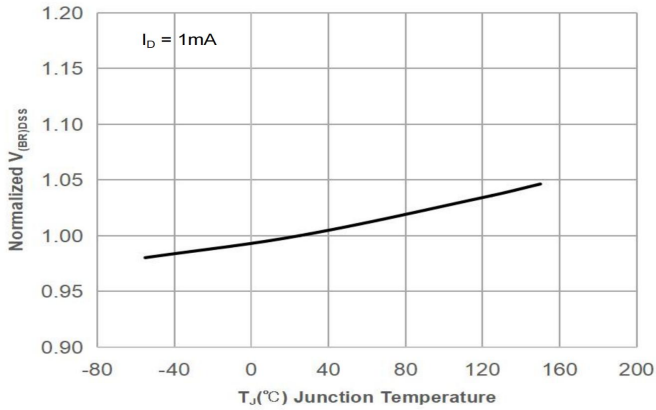


Figure 8: Normalized on Resistance vs. Junction Temperature

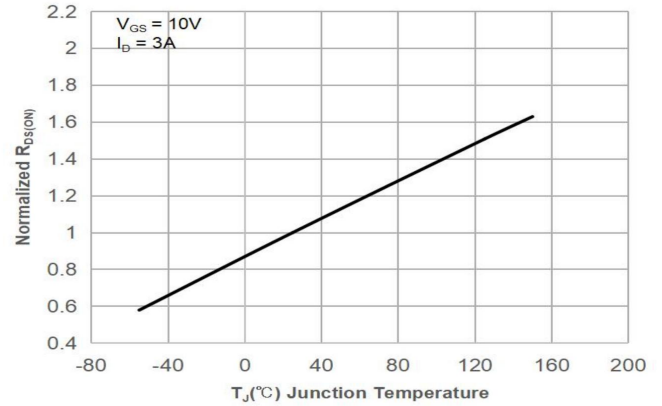


Figure 9: Maximum Safe Operating Area

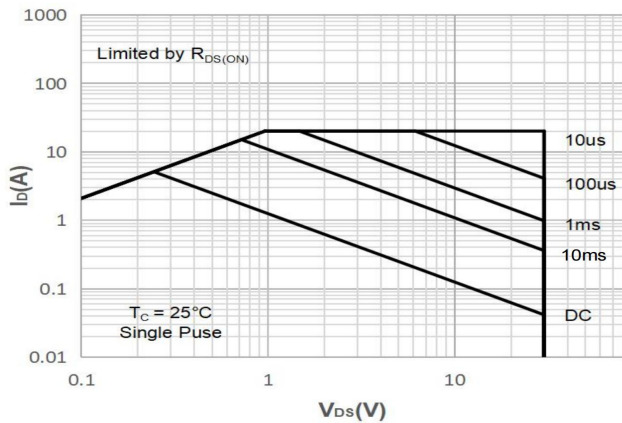


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

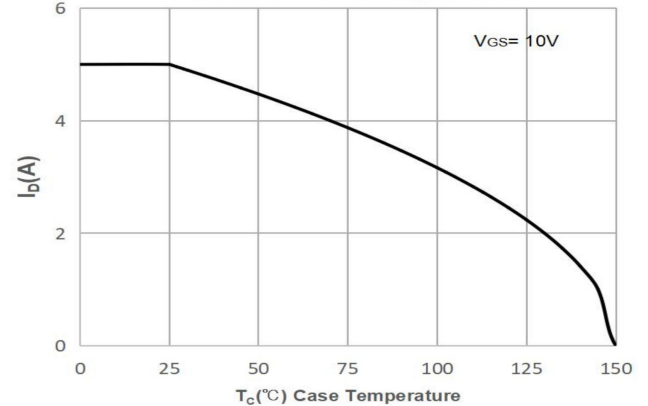


Figure 11: Normalized Maximum Transient Thermal Impedance

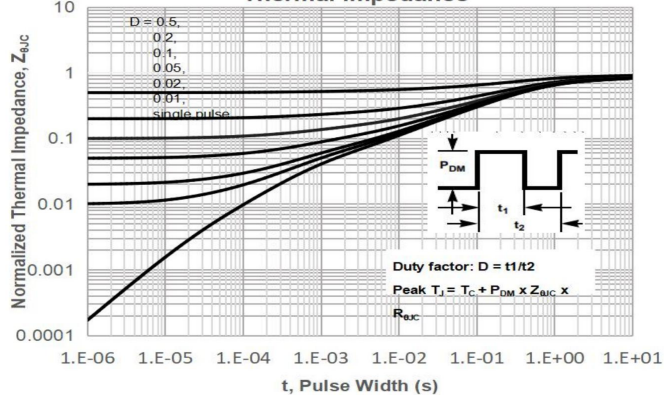
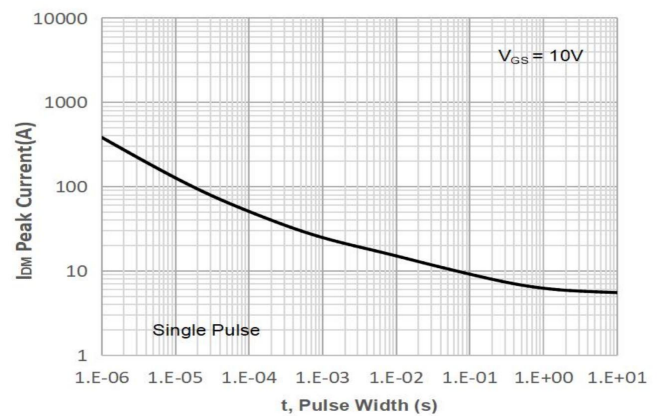


Figure 12: Peak Current Capacity



Test Circuit

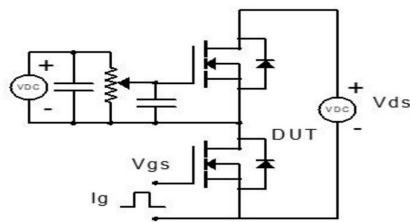


Figure 1: Gate Charge Test Circuit & Waveform

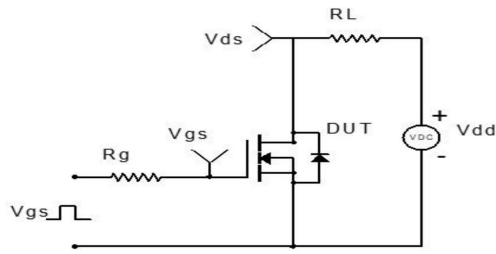


Figure 2: Resistive Switching Test Circuit & Waveform

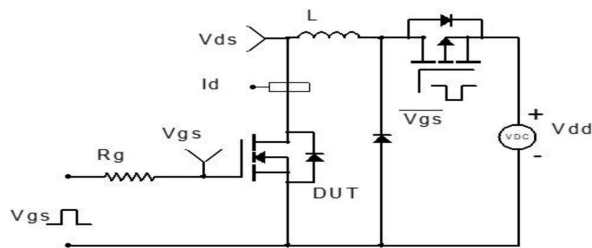


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

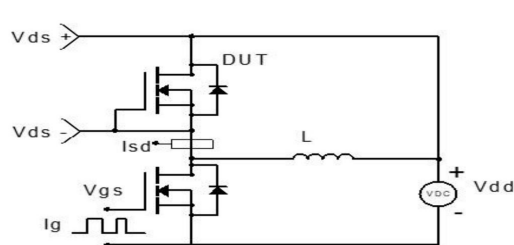
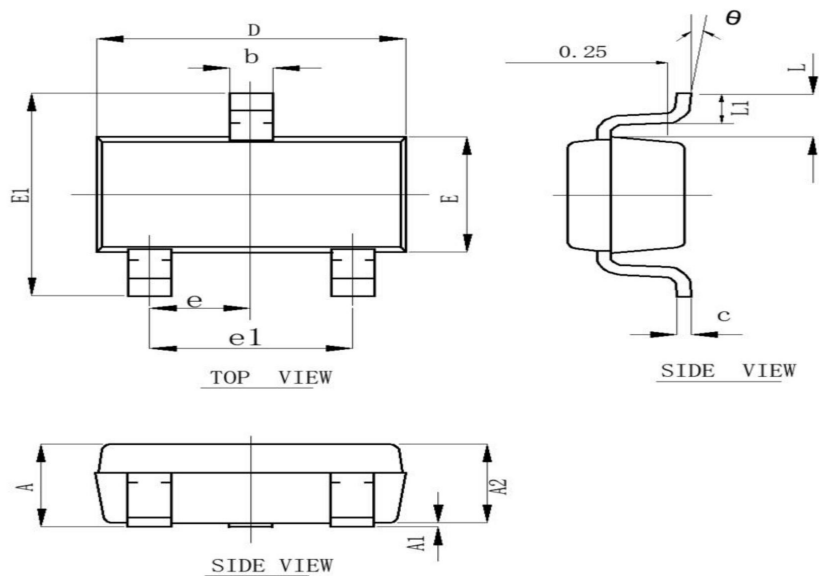


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data-SOT-23



COMMON DIMENSIONS In Millimeters		
SYMBOL	MIN	MAX
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
L	0.550 REF.	
θ	0°	8°
L1	0.300	0.500
e	0.950 TYP.	
e1	1.800	2.000