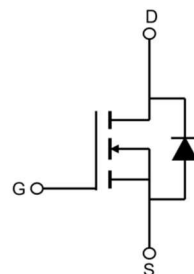


TP3400A

N-Channel Enhancement Mosfet

Feature

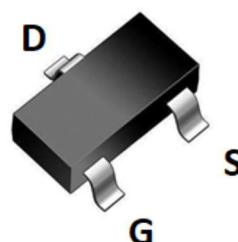
- 30V, 5.8A
 $R_{DS(ON)} < 26m\Omega @ V_{GS}=10V$ TYP=18 m Ω
 $R_{DS(ON)} < 32m\Omega @ V_{GS}=4.5V$ TYP=23 m Ω
- Advanced Trench Technology
- Lead free product is acquired



Schematic Diagram

Application

- Interfacing Switching
- Load Switching
- Power management



SOT23-3 top view

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
3400	TP3400A	Sot23-3	7 inch	-	3000

ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current ($T_a=25^\circ\text{C}$)	I_D	5.8	A
Continuous Drain Current ($T_a=70^\circ\text{C}$)	I_D	3.8	A
Pulsed Drain Current	I_{DM}	23	A
Power Dissipation	P_D	1.36	W
Thermal Resistance from Junction to Ambient ⁽⁴⁾	$R_{\theta JA}$	92	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$

MOSFET ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	30	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =30V, V _{GS} = 0V	-	-	1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±12V,V _{DS} = 0V	-	-	±100	nA
Gate threshold voltage ⁽³⁾	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.4	1.0	1.5	V
Drain-source on-resistance ⁽³⁾	R _{DS(on)}	V _{GS} =10V, I _D =5.8A	-	18	26	mΩ
		V _{GS} =4.5V, I _D =3A	-	23	32	
		V _{GS} =2.5V, I _D =1A	-	35	50	
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f =1MHz	-	700	-	pF
Output Capacitance	C _{oss}		-	66	-	
Reverse Transfer Capacitance	C _{rss}		-	52	-	
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} =15V, I _D =4A, V _{GS} =4.5V, R _G =10Ω	-	12	-	ns
Turn-on rise time	t _r		-	52	-	
Turn-off delay time	t _{d(off)}		-	17	-	
Turn-off fall time	t _f		-	10	-	
Total Gate Charge	Q _g	V _D S=15V, I _D =4A, V _G S=4.5V	-	4.8	-	nC
Gate-Source Charge	Q _{gs}		-	1.2	-	
Gate-Drain Charge	Q _{gd}		-	1.7	-	
Source-Drain Diode characteristics						
Diode Forward voltage ⁽³⁾	V _{DS}	V _{GS} =0V, I _S =5.8A	-	-	1.2	V
Diode Forward current ⁽⁴⁾	I _S		-	-	5.8	A

Notes:

1. Repetitive Rating: pulse width limited by maximum junction temperature
2. Pulse Test: pulse width $\leq 300\mu s$ duty cycle $\leq 2\%$

Test Circuit

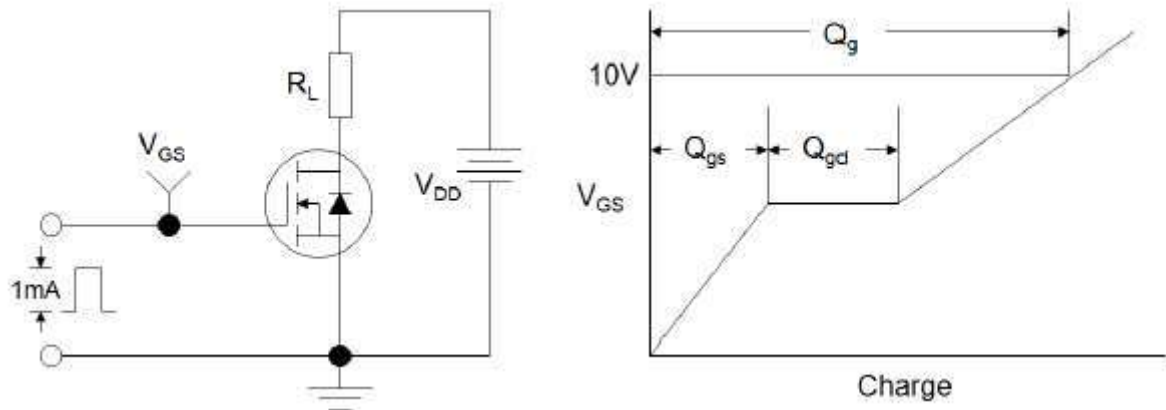


Figure1:Gate Charge Test Circuit & Waveform

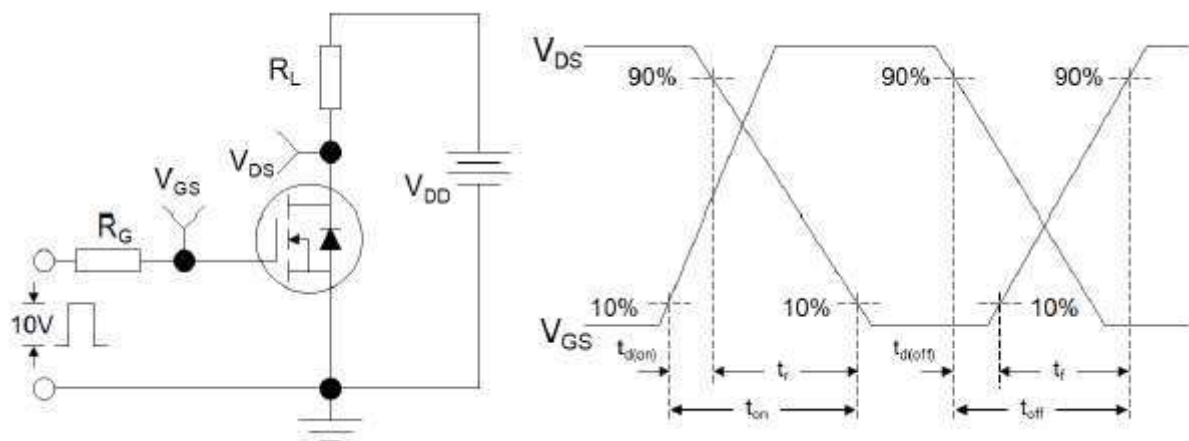


Figure 2: Resistive Switching Test Circuit & Waveforms

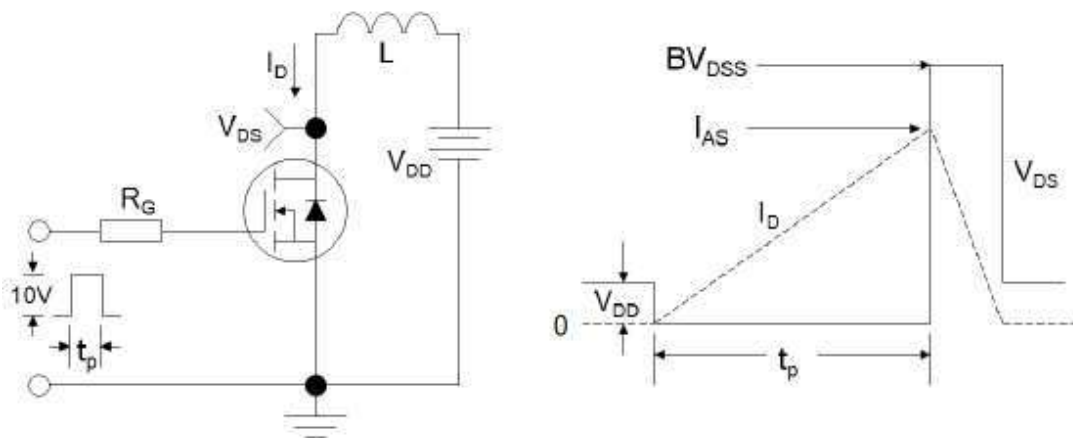


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

Typical Performance Characteristics

Figure 1: Output Characteristics

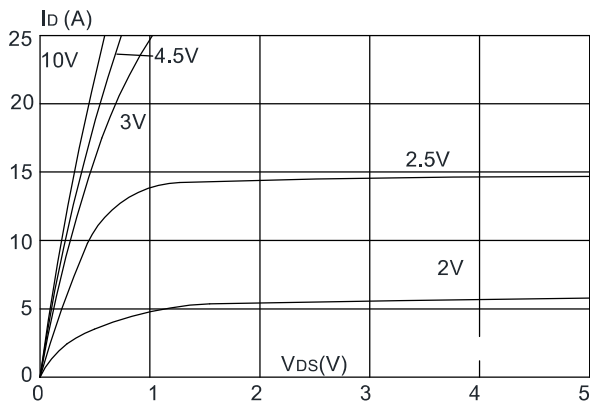


Figure 2: Typical Transfer Characteristics

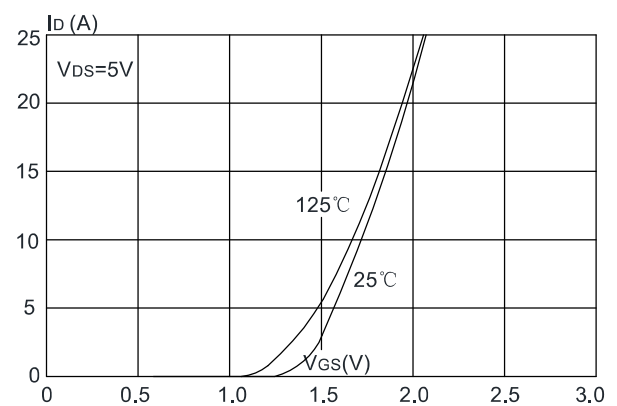


Figure 3: On-resistance vs. Drain Current

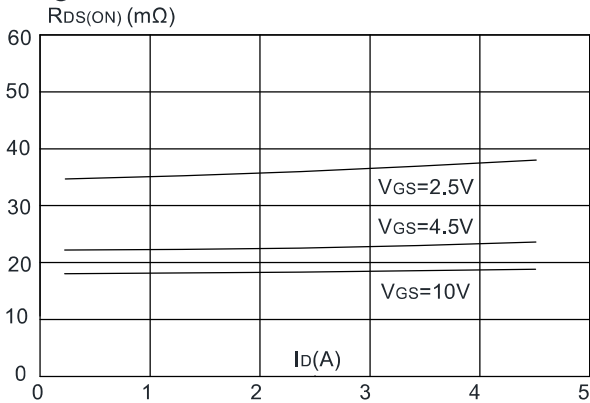


Figure 4: Body Diode Characteristics

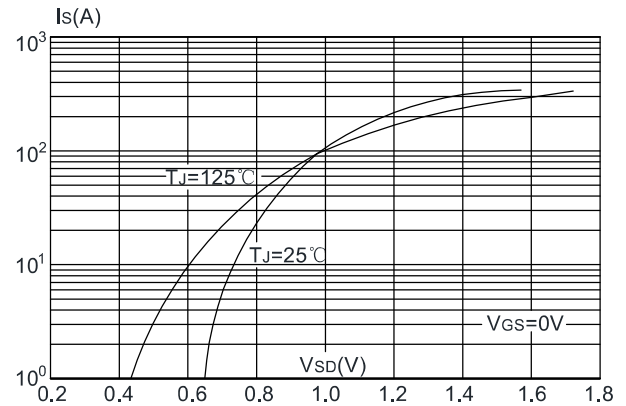


Figure 5: Gate Charge Characteristics

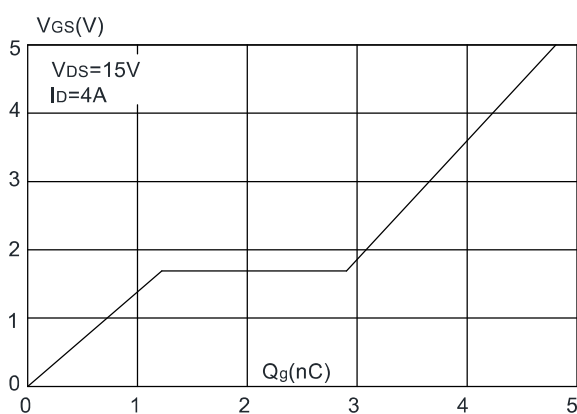


Figure 6: Capacitance Characteristics

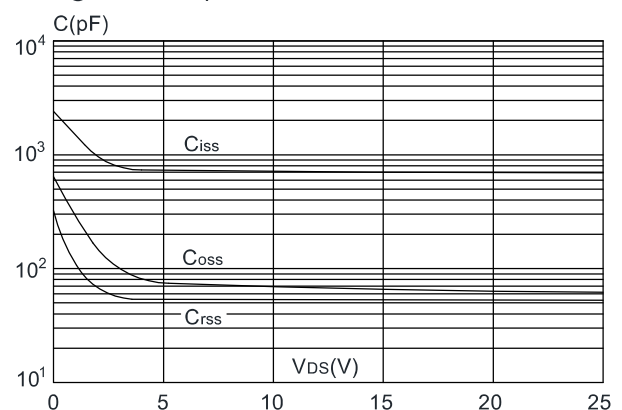


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

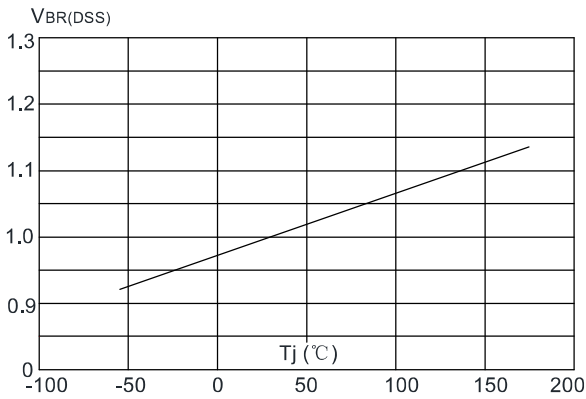


Figure 8: Normalized on Resistance vs. Junction Temperature

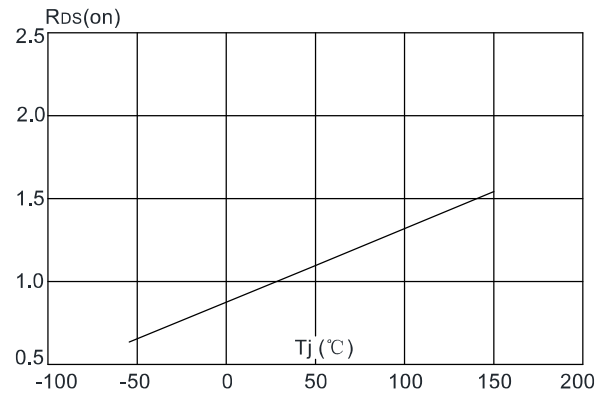


Figure 9: Maximum Safe Operating Area

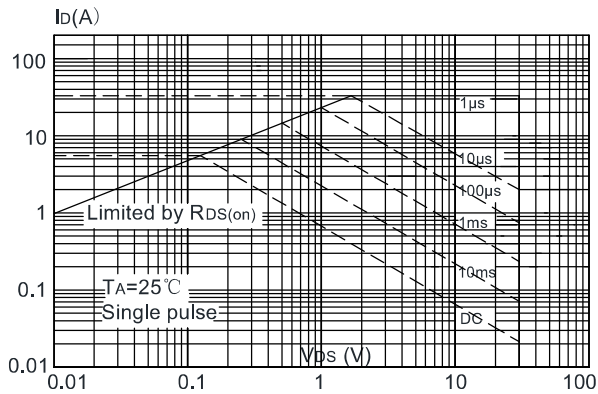


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

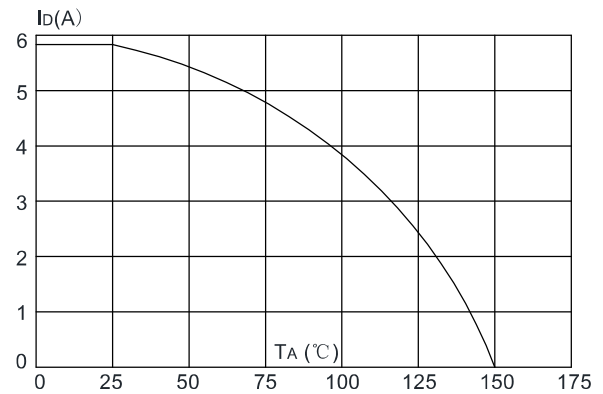
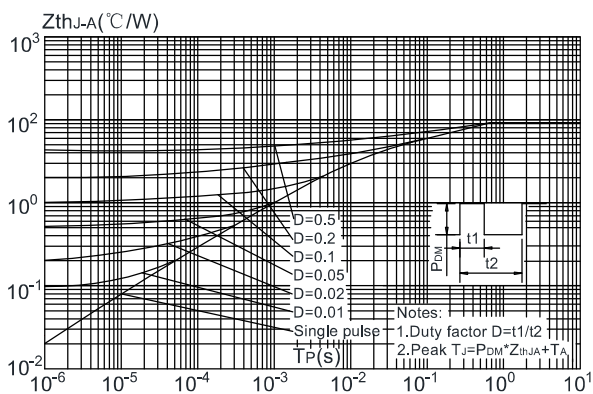
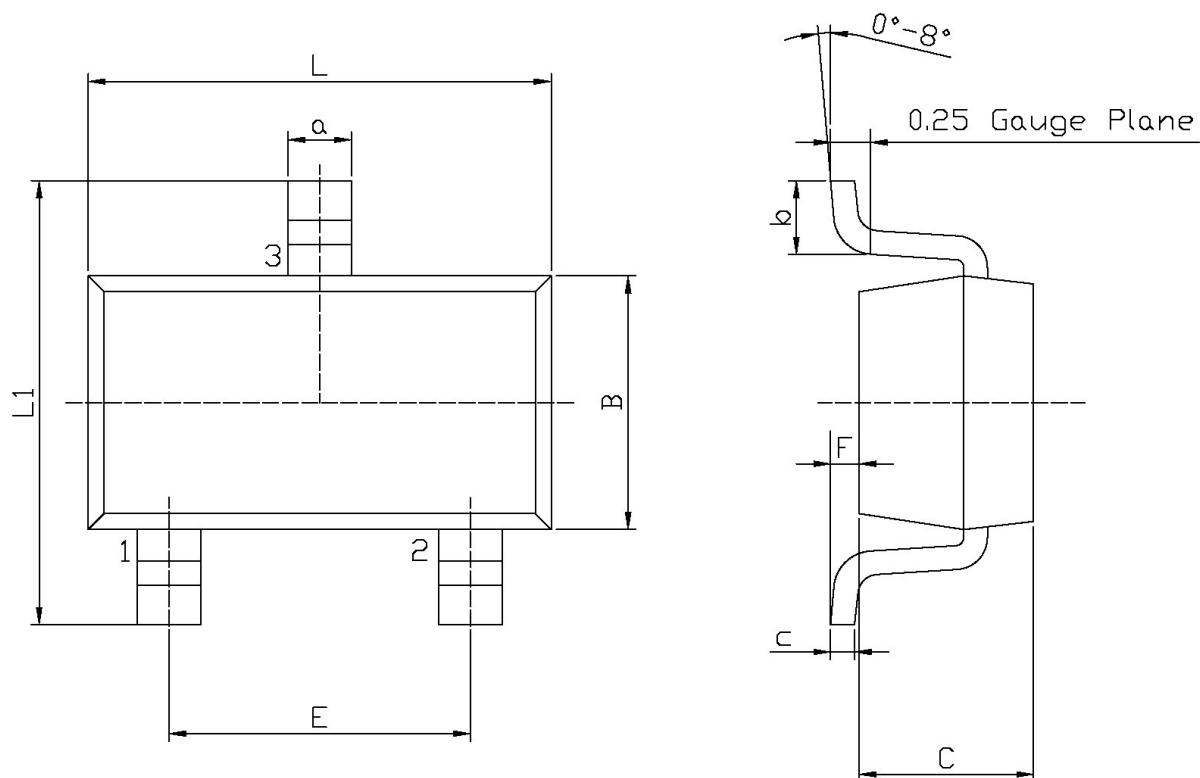


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



SOT23-3 Package Information



Unit: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
L	2.82	3.02	a	0.35	0.50
B	1.50	1.70	c	0.10	0.20
C	0.90	1.30	b	0.35	0.55
L1	2.60	3.00	F	0	0.15
E	1.80	2.00			

SOT23-3