

Description

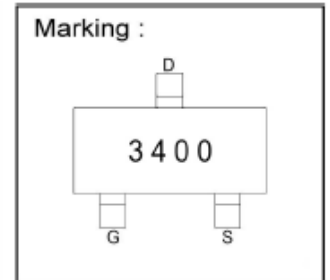
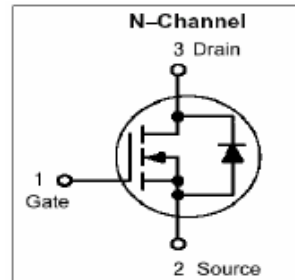
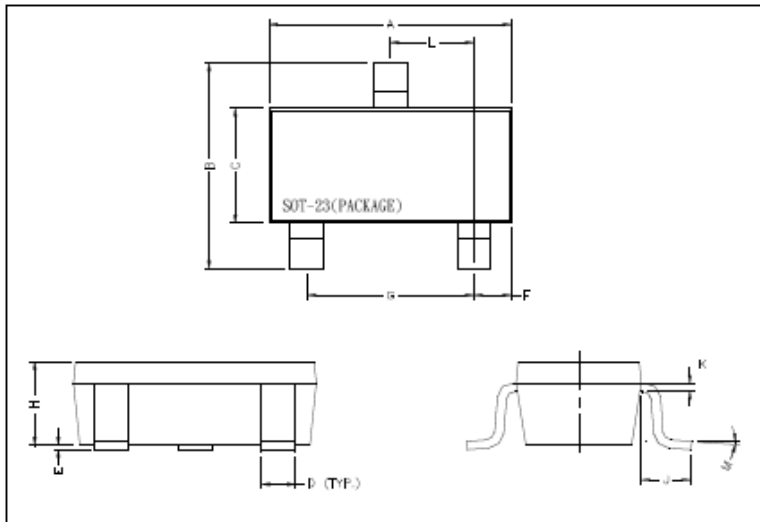
The KD3400 uses advanced trench technology to provide excellent on-resistance extremely efficient and cost-effectiveness device. The KD3400 is universally used for all commercial-industrial applications.

Features

- * Lower Gate Charge
- * Small Package Outline
- * RoHS Compliant

BV_{DSS}	30 V
R_{DS(ON)}	28 mΩ
I_D	5.8 A

Package Dimensions



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	1.90	REF.
B	2.40	2.80	H	1.00	1.30
C	1.40	1.60	K	0.10	0.20
D	0.35	0.50	J	0.40	-
E	0	0.10	L	0.85	1.15
F	0.45	0.55	M	0°	10°

Package : SOT-23-3L (SC-59)

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	+/- 12	V
Continuous Drain Current ³	I _D @TA=25°C	5.8	A
Continuous Drain Current ³	I _D @TA=70°C	4.9	A
Pulsed Drain Current ¹	I _{DM}	30	A
Power Dissipation	P _D @TA=25°C	1.38	W
Linear Derating Factor		0.01	W/°C
operating Junction and Storage Temperature Range	T _j , T _{stg}	-55~+150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient ³ Max.	R _{thj-amb}	90	°C/W

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV _{DSS}	30	-	-	V	V _{GS} =0, I _D =250uA
Gate Threshold Voltage	V _{GS(th)}	0.7	-	1.4	V	V _{DS} =V _{GS} , I _D =250uA
Forward Transconductance	g _{fs}	-	15	-	S	V _{DS} =5V, I _D =5A
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} = ±12V
Drain-Source Leakage Current(T _j =25°C)	I _{DSS}	-	-	1	uA	V _{DS} =24V, V _{GS} =0
Drain-Source Leakage Current(T _j =55°C)		-	-	5	uA	V _{DS} =24V, V _{GS} =0
Static Drain-Source On-Resistance	R _{DS(ON)}	-	-	28	mΩ	V _{GS} =10V, I _D =5.8A
		-	-	33		V _{GS} =4.5V, I _D =5.0A
		-	-	52		V _{GS} =2.5V, I _D =4.0A
Total Gate Charge ²	Q _g	-	9.7	12	nC	I _D =5.8A V _{DS} =15V V _{GS} =4.5V
Gate-Source Charge	Q _{gs}	-	1.6	-		
Gate-Drain ("Miller") Change	Q _{gd}	-	3.1	-		
Turn-on Delay Time ²	T _{d(on)}	-	3.3	-	ns	V _{DS} =15V V _{GS} =10V R _G =3Ω R _L =2.7Ω
Rise Time	T _r	-	4.8	-		
Turn-off Delay Time	T _{d(off)}	-	26.3	-		
Fall Time	T _f	-	4.1	-		
Input Capacitance	C _{iss}	-	823	1030	pF	V _{GS} =0V V _{DS} =15V f=1.0MHz
Output Capacitance	C _{oss}	-	99	-		
Reverse Transfer Capacitance	C _{riss}	-	77	-		
Gate Resistance	R _g	-	1.2	3.6	Ω	f=1.0MHz

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage ²	V _{SD}	-	-	1.0	V	I _S =1.0A, V _{GS} =0V
Reverse Recovery Time ²	T _{rr}	-	16	-	ns	I _S =5A, V _{GS} =0V di/dt=100A/μs
Reverse Recovery Charge	Q _{rr}	-	8.9	-	nC	
Continuous Source Current (Body Diode)	I _S	-	-	2.5	A	V _D =V _G =0V, V _S =1.0V

Notes: 1. Pulse width limited by Max. junction temperature.

2. Pulse width ≤ 300us, duty cycle ≤ 2%.

3. Surface mounted on 1 in² copper pad of FR4 board; 270°C/W when mounted on Min. copper pad.

Characteristics Curve

Fig 1. Typical Output Characteristics

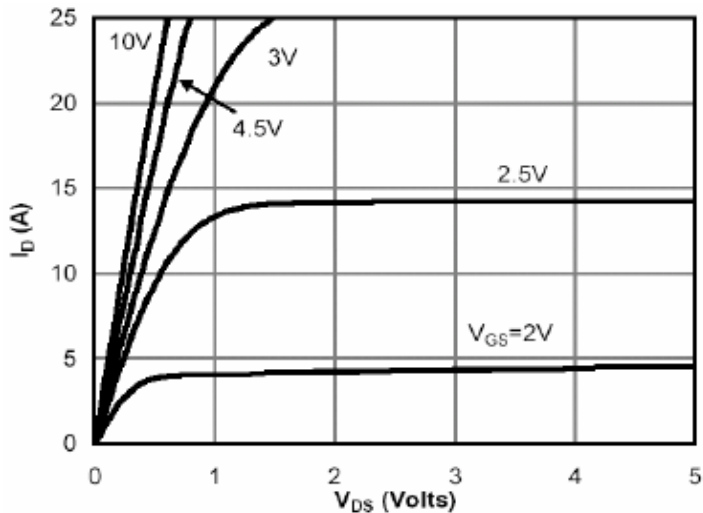


Fig 2. Transfer Characteristics

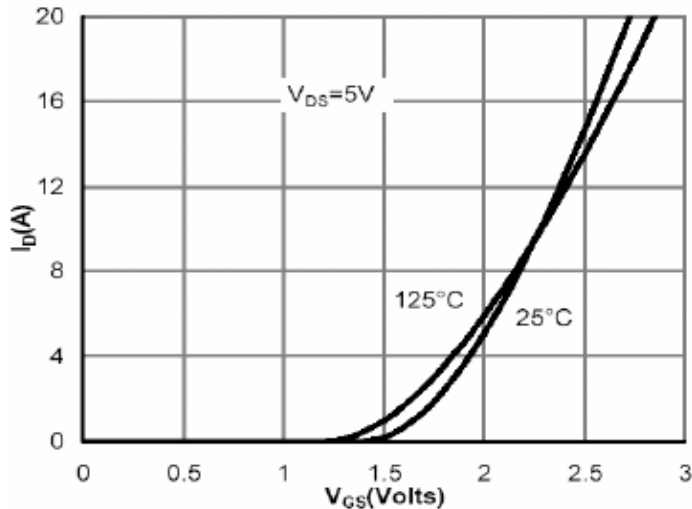


Fig 3. On-Resistance v.s. Drain Current and Gate Voltage

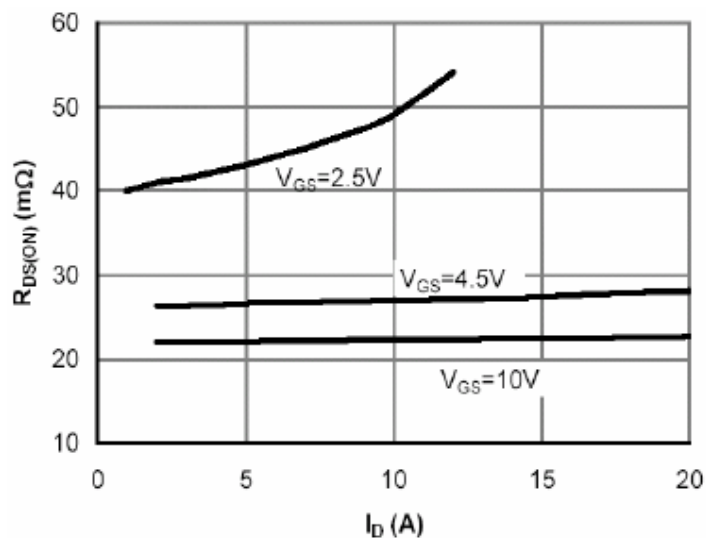


Fig 4. On-Resistance v.s. Junction Temperature

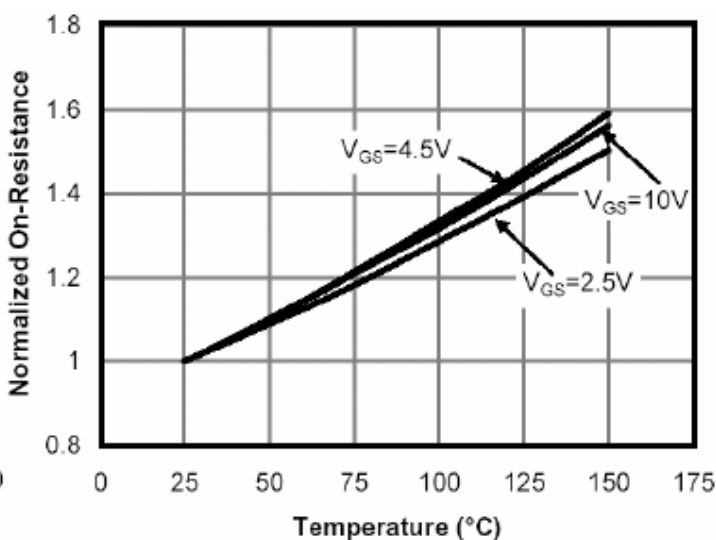


Fig 5. On-Resistance v.s. Gate-Source Voltage

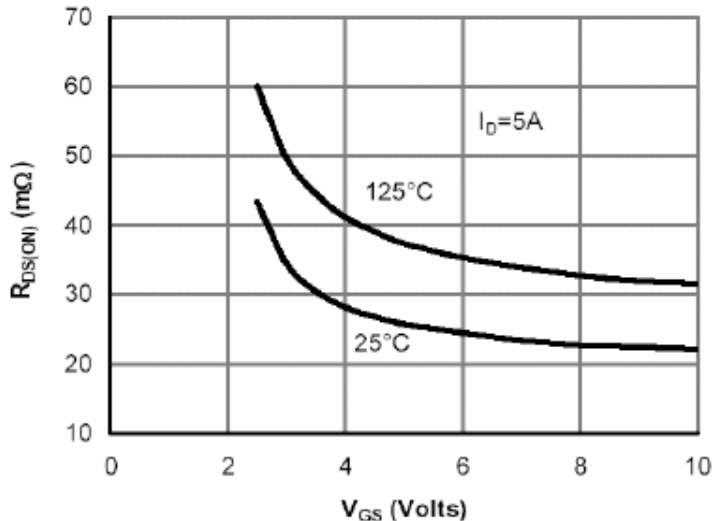


Fig 6. Body Diode Characteristics

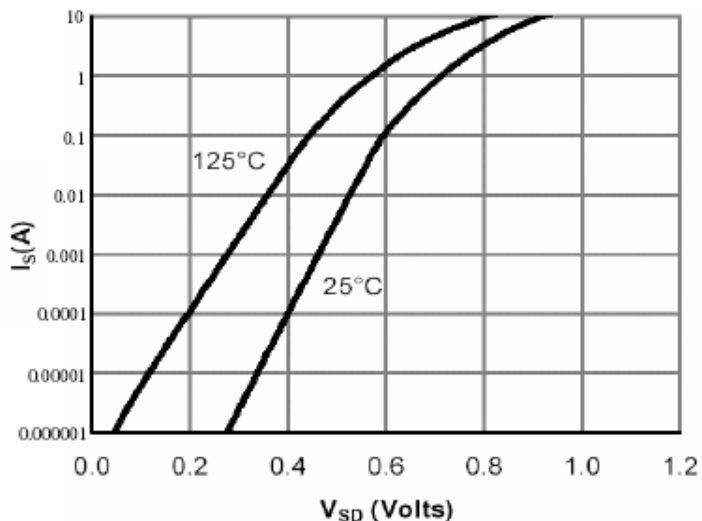


Fig 7. Maximum Safe Operating Area

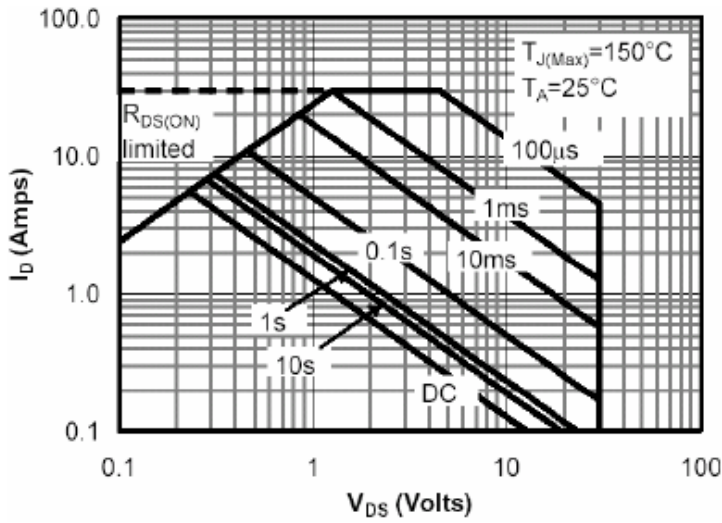


Fig 8. Single Pulse Power Rating Junction-to-Ambient

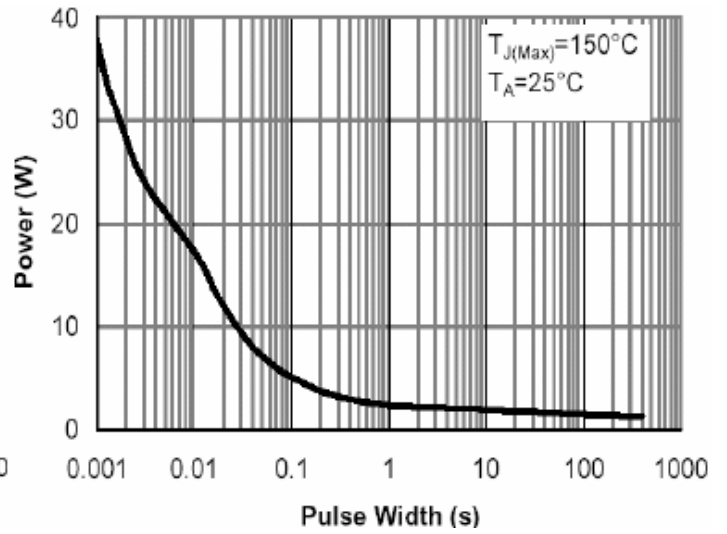


Fig 9. Gate Charge Characteristics

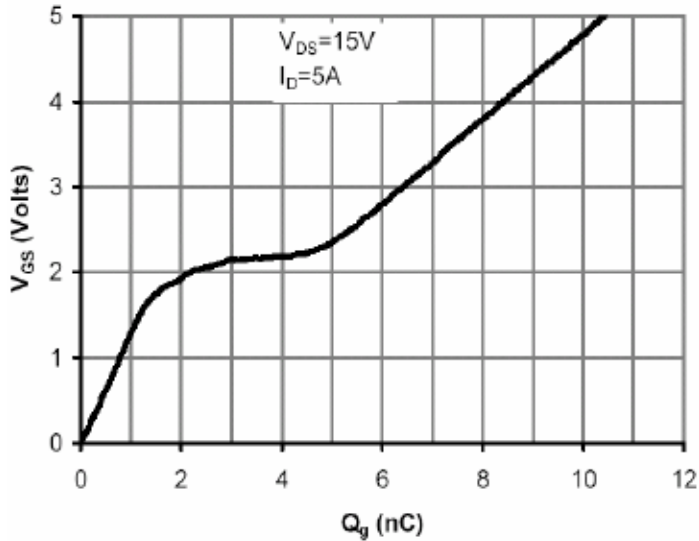


Fig 10. Typical Capacitance Characteristics

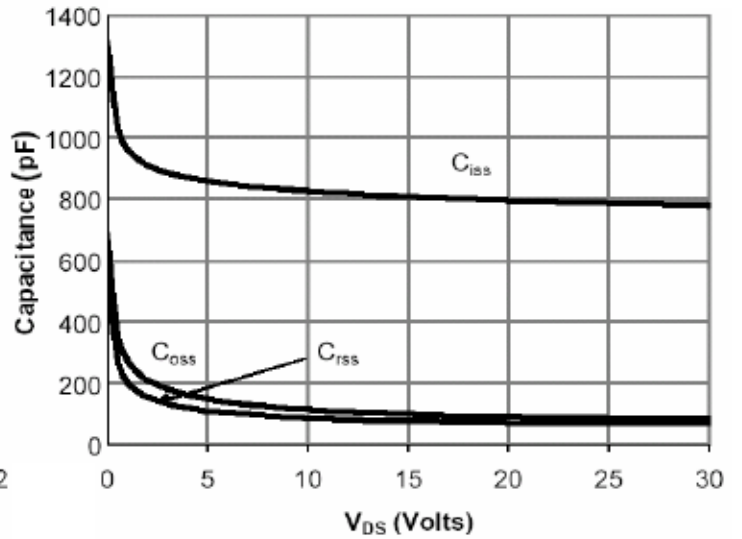


Fig 11. Normalized Maximum Transient Thermal Impedance

