

GI494

N-CHANNEL ENHANCEMENT MODE POWER MOSFET

BVDSS	30V
RDS(ON)	11mΩ
ID	55A

Description

The GI494 uses advanced trench technology to provide excellent on-resistance and low gate charge. The through-hole version (TO-251) is available for low-profile applications and suited for use as a high side switch in SMPS and general purpose applications.

Features

- *Simple Drive Requirement
- *Lower On-resistance
- *Fast Switching Characteristic

Package Dimensions

TO-251

Marking :

REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.40	6.80	G	0.50	0.70
B	5.20	5.50	H	2.20	2.40
C	6.80	7.20	J	0.45	0.55
D	7.20	7.80	K	0.45	0.60
E	2.30 REF.		L	0.90	1.50
F	0.60	0.90	M	5.40	5.80

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current, $V_{GS}@10V$	$I_D @T_C=25^\circ C$	55	A
Continuous Drain Current, $V_{GS}@10V$	$I_D @T_C=100^\circ C$	39	A
Pulsed Drain Current ¹	I_{DM}	120	A
Total Power Dissipation	$P_D @T_C=25^\circ C$	63	W
Linear Derating Factor		0.42	W/°C
Operating Junction and Storage Temperature Range	T_j, T_{stg}	-55 ~ +175	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-case Max.	Rthj-c	2.4	°C/W
Thermal Resistance Junction-ambient Max.	Rthj-a	50	°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)}	1.0	-	2.5	V	V _{DS} =V _{GS} , I _D =250uA
Forward Transconductance	g _{fs}	-	40	-	S	V _{DS} =5V, I _D =20A
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} =30V, V _{GS} =0
Drain-Source Leakage Current(T _j =55°C)		-	-	25	uA	V _{DS} =24V, V _{GS} =0
Static Drain-Source On-Resistance ²	R _{DS(ON)}	-	-	11	mΩ	V _{GS} =10V, I _D =20A
		-	-	13.5		V _{GS} =4.5V, I _D =20A
Total Gate Charge ²	Q _g	-	22	28	nC	I _D =20A V _{DS} =15V V _{GS} =10V
Gate-Source Charge	Q _{gs}	-	3.7	-		
Gate-Drain ("Miller") Charge	Q _{gd}	-	2.7	-		
Turn-on Delay Time ²	T _{d(on)}	-	10	-	ns	V _{DS} =15V V _{GS} =10V R _G =3Ω R _L =0.75Ω
Rise Time	T _r	-	6.3	-		
Turn-off Delay Time	T _{d(off)}	-	21	-		
Fall Time	T _f	-	2.8	-		
Input Capacitance	C _{iss}	-	1210	1452	pF	V _{GS} =0V V _{DS} =15V f=1.0MHz
Output Capacitance	C _{oss}	-	330	-		
Reverse Transfer Capacitance	C _{rss}	-	85	-		

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage ²	V _{SD}	-	-	1.0	V	I _S =1A, V _{GS} =0V
Continuous Source Current (Body Diode)	I _S	-	-	55	A	V _D = V _G =0V, V _S =1.0V
Reverse Recovery Time ²	T _{rr}	-	36	-	ns	I _S =20A, V _{GS} =0V di/dt=100A/μs
Reverse Recovery Charge	Q _{rr}	-	47	-	nC	

Notes: 1. Pulse width limited by safe operating area.

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

Characteristics Curve

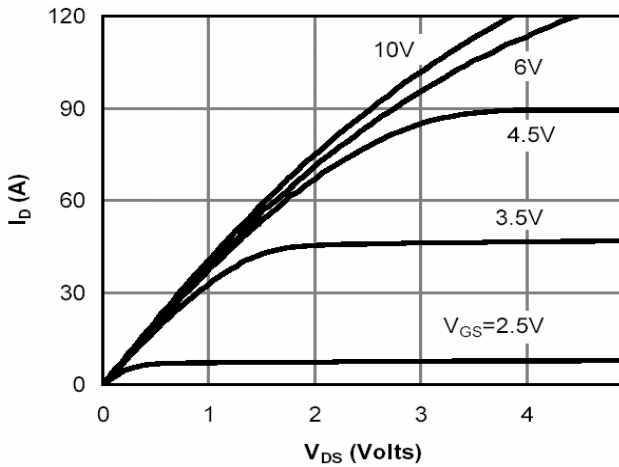


Fig 1. Typical Output Characteristics

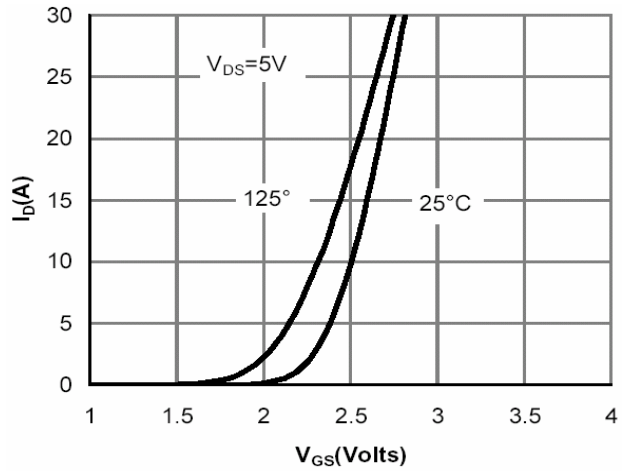


Fig 2. Transfer Characteristics

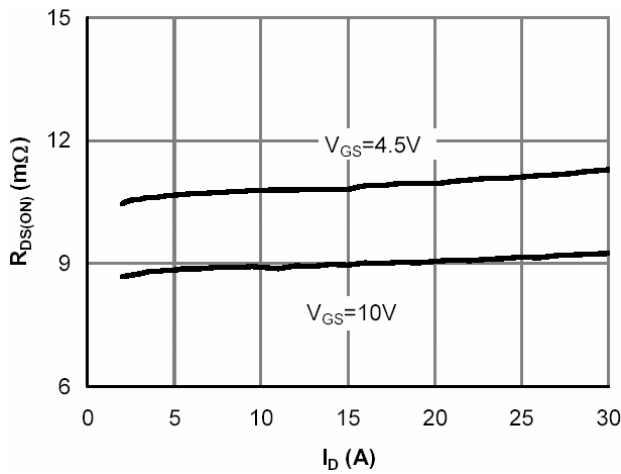


Fig 3. On-Resistance v.s. Drain Current and Gate Voltage

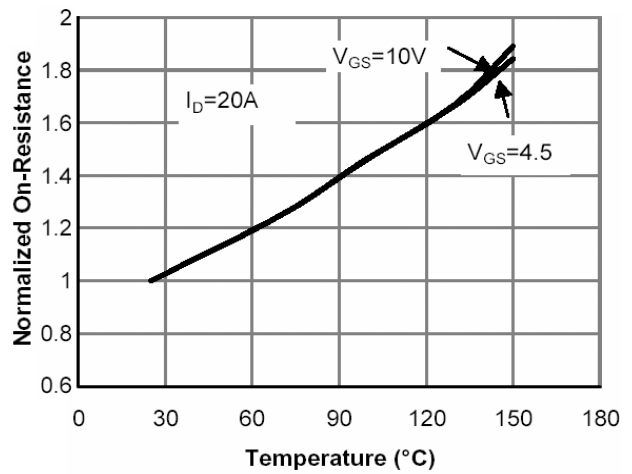


Fig 4. On-Resistance v.s. Junction Temperature

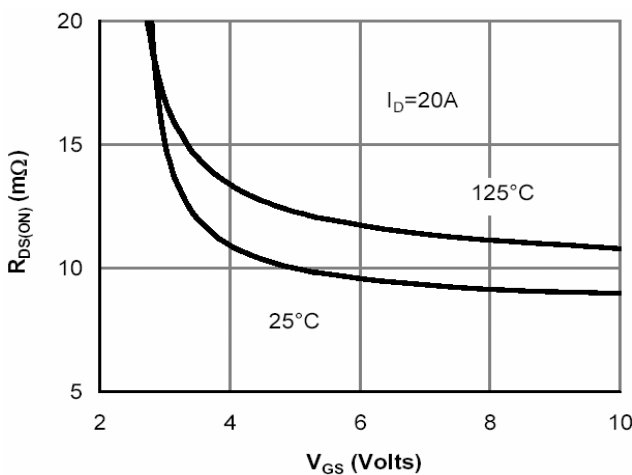


Fig 5. On-Resistance v.s. Gate-Source Voltage

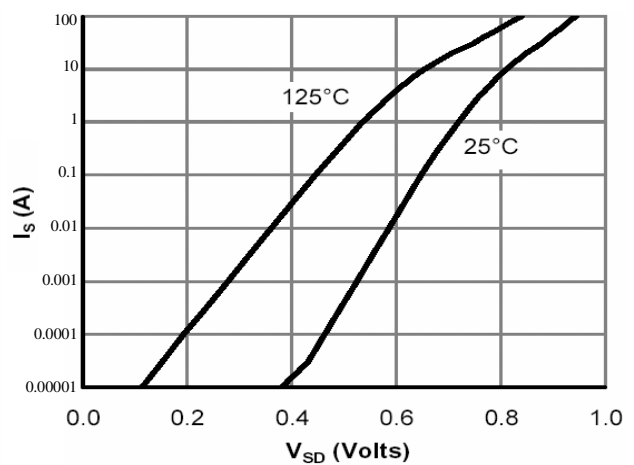


Fig 6. Body Diode Characteristics

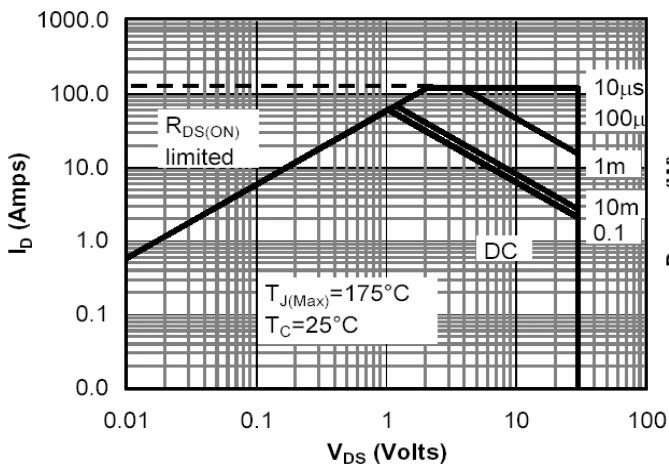


Fig 7. Maximum Safe Operating Area

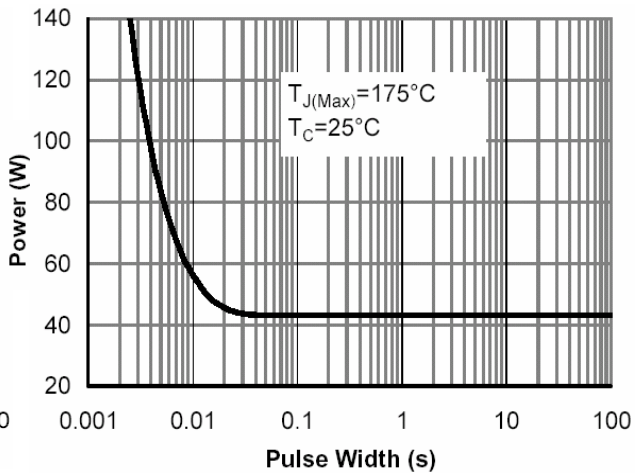


Fig 8. Single Pulse Power Rating Junction-to-Ambient

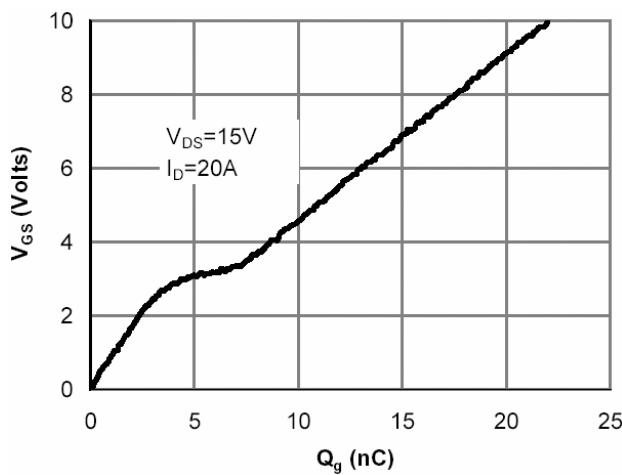


Fig 9. Gate Charge Characteristics

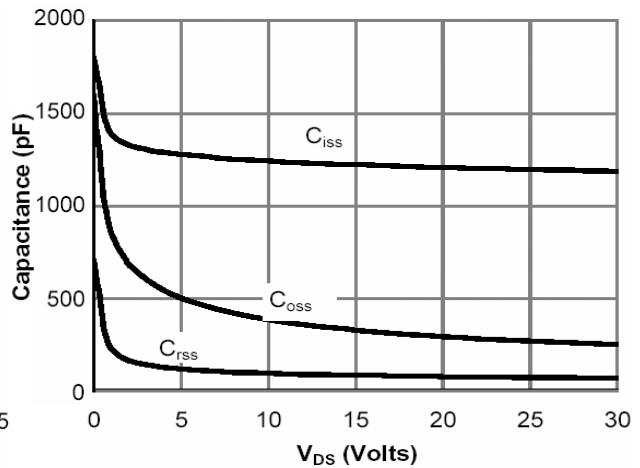


Fig 10. Typical Capacitance Characteristics

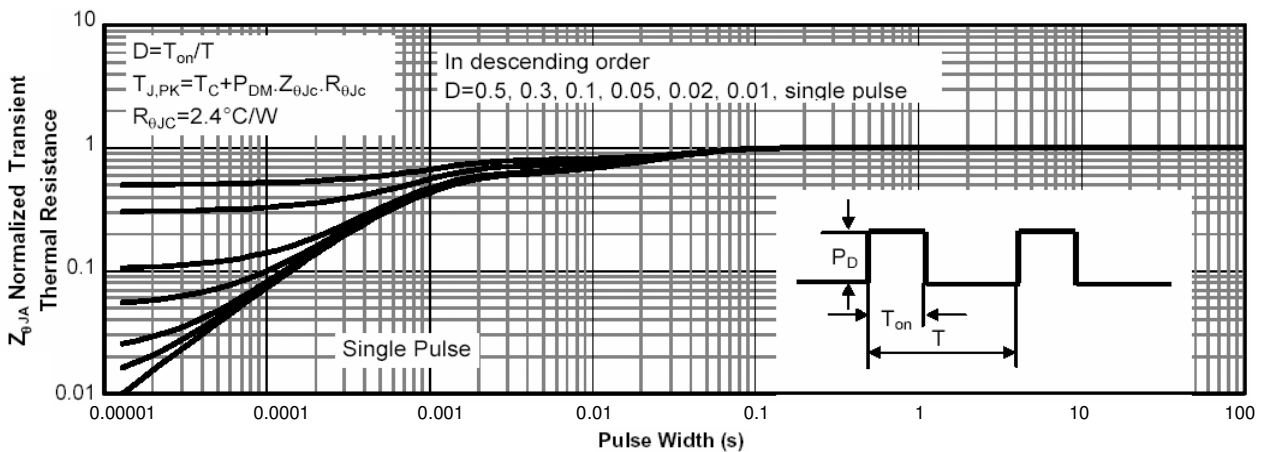


Fig 11. Normalized Maximum Transient Thermal Impedance

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