Pb Free Plating Product

GTM CORPORATION

ISSUED DATE :2006/10/19
REVISED DATE :

GSC4409

P-CHANNEL ENHANCEMENT MODE POWER MOSFET

BV_{DSS}	-30V
$R_{DS(ON)}$	7.5mΩ
I_D	-15A

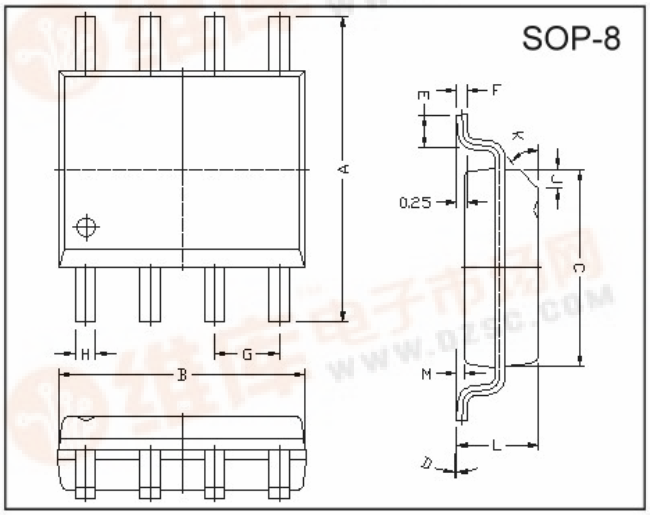
Description

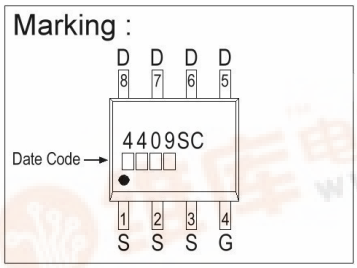
The GSC4409 uses advanced trench technology to provide excellent on-resistance and ultra low gate charge. The SOP-8 package is universally preferred for all commercial-industrial surface mount applications and suited for use as a load switch or in PWM applications.

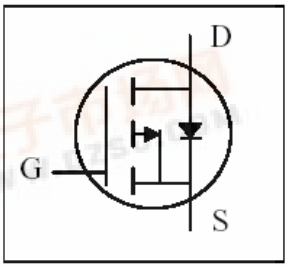
Features

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

Package Dimensions







REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.80	6.20	M	0.10	0.25
B	4.80	5.00	H	0.35	0.49
C	3.80	4.00	L	1.35	1.75
D	0°	8°	J	0.375 REF.	
E	0.40	0.90	K	45°	
F	0.19	0.25	G	1.27 TYP.	

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[3]	I_D @T_A=25℃	-15	A
Continuous Drain Current[3]	I_D @T_A=70℃	-12.8	A
Pulsed Drain Current[1]	I_{DM}	-80	A
Total Power Dissipation	P_D @T_A=25℃	2.5	W
Linear Derating Factor		0.02	W/℃
Operating Junction and Storage Temperature Range	Tj, Tstg	-55 ~ +150	℃

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-ambient[3] Max.	Rthj-amb	50	℃/W

Electrical Characteristics (Tj = 25℃ 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	$V_{GS(th)}$	-1.4	-	-2.7	V	V_{DS}=V_{GS}, I_D=-250uA
Forward Transconductance	g_{fs}	-	50	-	S	V_{DS}=-5V, I_D=-15A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current(Tj=25℃)	I_{DSS}	-	-	-5	uA	V_{DS}=-30V, V_{GS}=0
Drain-Source Leakage Current(Tj=55℃)		-	-	-25	uA	V_{DS}=-24V, V_{GS}=0
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	-	-	7.5	mΩ	V_{GS}=-10V, I_D=-15A
		-	-	12		V_{GS}=-4.5V, I_D=-10A
Total Gate Charge[2]	Q_g	-	100	120	nC	I_D=-15A V_{DS}=-15V V_{GS}=-10V
Gate-Source Charge	Q_{gs}	-	14.5	-		
Gate-Drain (“Miller”) Change	Q_{gd}	-	23	-		
Turn-on Delay Time[2]	$T_{d(on)}$	-	14	-	ns	V_{DS}=-15V V_{GS}=-10V R_G=3Ω R_L=1Ω
Rise Time	T_r	-	16.5	-		
Turn-off Delay Time	$T_{d(off)}$	-	76.5	-		
Fall Time	T_f	-	37.5	-		
Input Capacitance	C_{iss}	-	5270	6400	pF	V_{GS}=0V V_{DS}=-15V f=1.0MHz
Output Capacitance	C_{oss}	-	945	-		
Reverse Transfer Capacitance	C_{rss}	-	745	-		

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
Continuous Source Current (Body Diode)	I_S	-	-	-5	A	V_D= V_G=0V, V_S=-1.0V
Reverse Recovery Time[2]	T_{rr}	-	36.7	-	ns	I_S=-15A, V_{GS}=0V dI/dt=100A/μs
Reverse Recovery Charge	Q_{rr}	-	28	-	nC	

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

2. Pulse width≦300us, duty cycle≦2%.

3. Surface mounted on 1 in^2 copper pad of FR4 board; 125℃/W when mounted on Min. copper pad.

Characteristics Curve

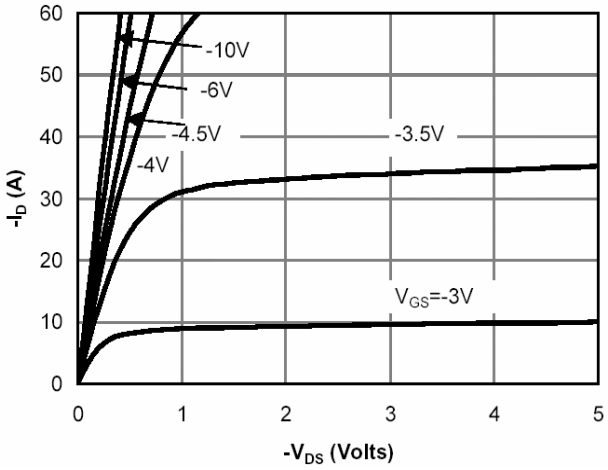


Fig 1. Typical Output Characteristics

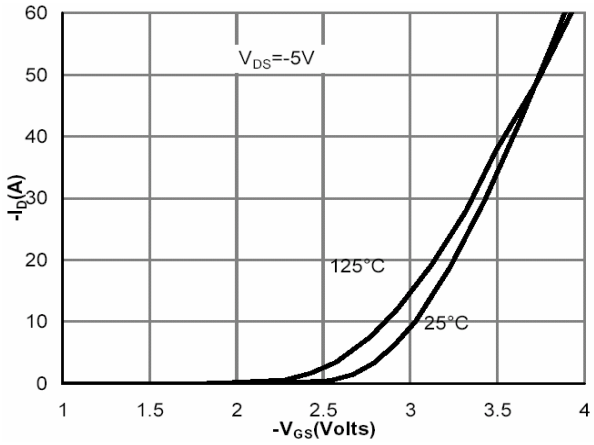


Fig 2. Transfer Characteristics

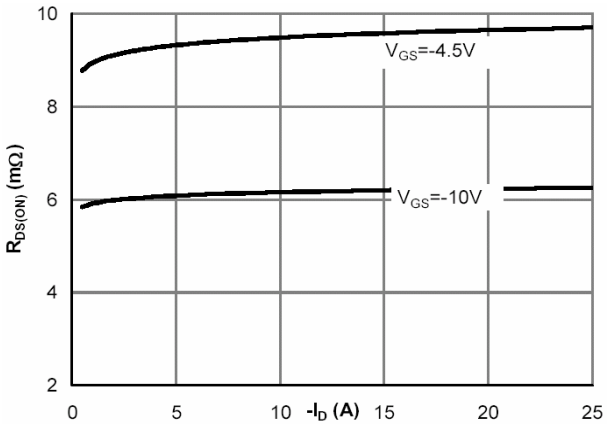


Fig 3. On-Resistance v.s. Drain Current and Gate Voltage

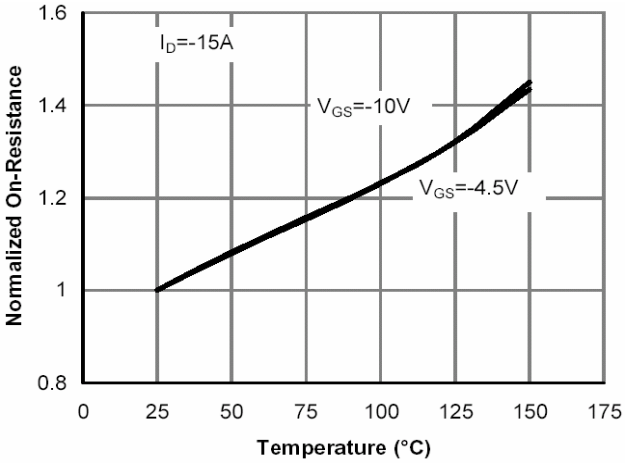


Fig 4. On-Resistance v.s. Junction Temperature

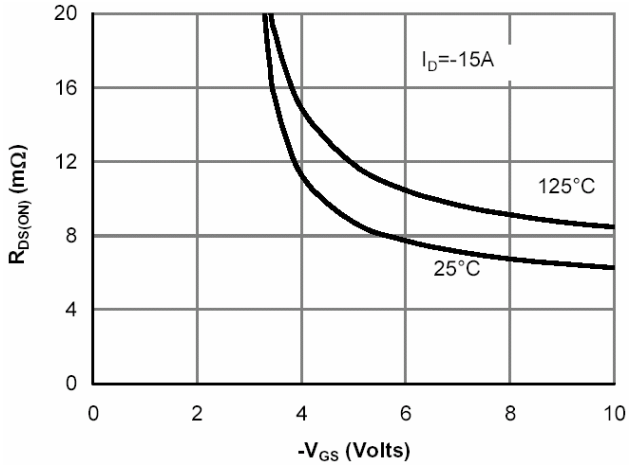


Fig 5. On-Resistance v.s. Gate-Source Voltage

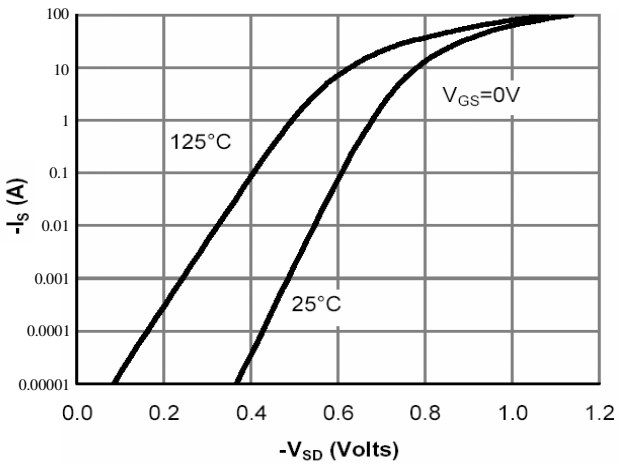


Fig 6. Body Diode Characteristics

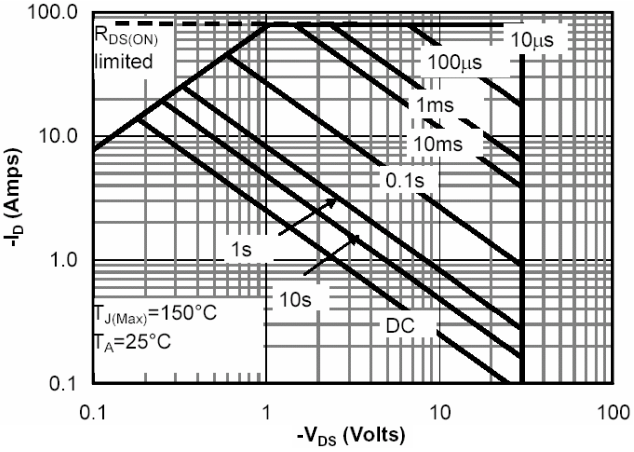


Fig 7. Maximum Safe Operating Area

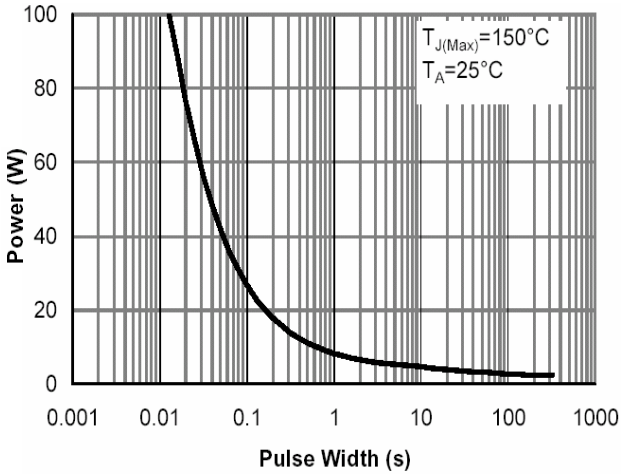


Fig 8. Single Pulse Maximum Power Dissipation

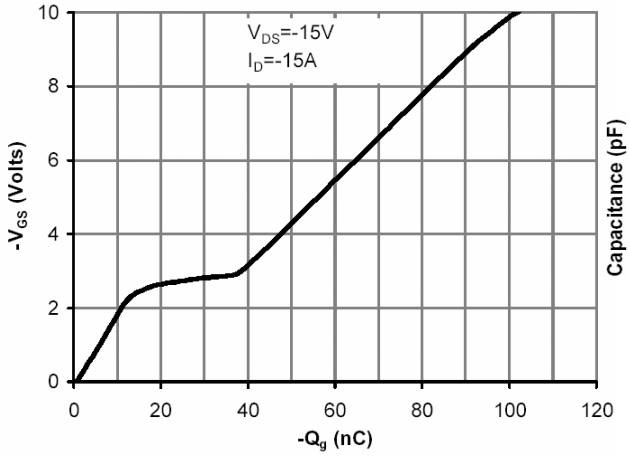


Fig 9. Gate Charge Characteristics

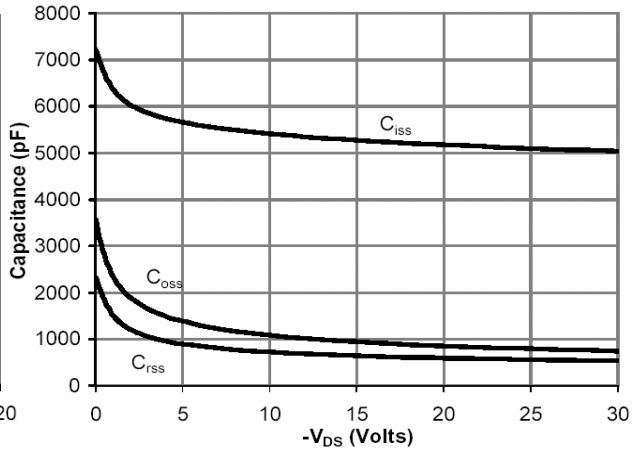


Fig 10. Typical Capacitance Characteristics

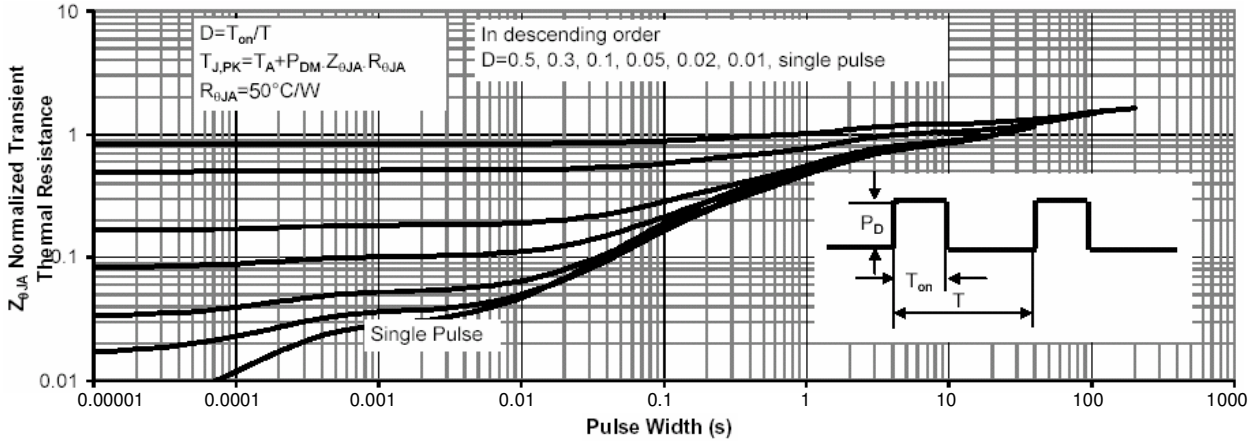


Fig 11. Normalized Maximum Transient Thermal Impedance

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