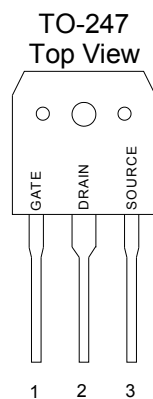




GENERAL DESCRIPTION

This high voltage MOSFET uses an advanced termination scheme to provide enhanced voltage-blocking capability without degrading performance over time. In addition, this advanced MOSFET is designed to withstand high energy in avalanche and commutation modes. The new energy efficient design also offers a drain-to-source diode with a fast recovery time. Designed for high voltage, high speed switching applications in power supplies, converters and PWM motor controls, these devices are particularly well suited for bridge circuits where diode speed and commutating safe operating areas are critical and offer additional and safety margin against unexpected voltage transients.

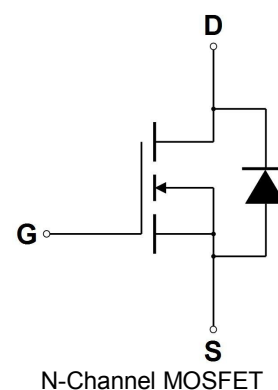
PIN CONFIGURATION



FEATURES

- ◆ Robust High Voltage Termination
- ◆ Avalanche Energy Specified
- ◆ Source-to-Drain Diode Recovery Time Comparable to a Discrete Fast Recovery Diode
- ◆ Diode is Characterized for Use in Bridge Circuits
- ◆ I_{DSS} and $V_{DS(on)}$ Specified at Elevated Temperature
- ◆ Isolated Mounting Hole Reduces Mounting Hardware

SYMBOL



ABSOLUTE MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain to Current — Continuous	$I_{D(1)}$	99.5	A
— Pulsed	I_{DM}	298.5	
Gate-to-Source Voltage — Continue	V_{GS}	± 20	V
Total Power Dissipation —TO-247	P_D	767	W
Derate above 25°C —TO-247		6.13	W/°C
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C
Single Pulse Drain-to-Source Avalanche Energy — $T_J = 25^\circ\text{C}$ ($V_{DD} = 100\text{V}$, $V_{GS} = 10\text{V}$, $I_L = 18\text{A}$, $L = 20\text{mH}$, $R_G = 25\Omega$)	E_{AS}	3240	mJ
Thermal Resistance — Junction to Case —TO-247	θ_{JC}	0.163	°C/W
— Junction to Ambient —TO-247	θ_{JA}	40	
Maximum Lead Temperature for Soldering Purposes, 1/8" from case for 10 seconds	T_L	260	°C

(1) Drain current limited by maximum junction temperature



GWM100S50

POWER FIELD EFFECT TRANSISTOR

ORDERING INFORMATION

Part Number	TOP MARK	Part Number	Packing Mthod	Note
GWM100S50XN247 (Notte1)	GWM100S50X	TO-247	Tube	

Note1: X : Suffix for Halogen Free Product,

ELECTRICAL CHARACTERISTICS

Unless otherwise specified, $T_J = 25^{\circ}\text{C}$.

		GWM100S50				
Characteristic		Symbol	Min	Typ	Max	Units
Drain-Source Breakdown Voltage (V _{GS} = 0 V, I _D = 250 μA)		V _{(BR)DSS}	500			V
Drain-Source Leakage Current (V _{DS} =500 V, V _{GS} = 0 V)		I _{DSS}			1	uA
Gate-Source Leakage Current-Forward (V _{gsf} = 20 V, V _{DS} = 0 V)		I _{GSSF}			100	nA
Gate-Source Leakage Current-Reverse (V _{gsr} = - 20 V, V _{DS} = 0 V)		I _{GSSR}			100	nA
Gate Threshold Voltage (V _{DS} = V _{GS} , I _D = 250 μA)		V _{GS(th)}	2	3	4	V
Static Drain-Source On-Resistance (V _{GS} = 10 V, I _D = 33.4A) *		R _{DS(on)}		26	31	mΩ
Input Capacitance	(V _{DS} = 100 V, V _{GS} = 0 V, f = 1.0 MHz)	C _{iss}		6193		pF
Output Capacitance		C _{oss}		266		pF
Reverse Transfer Capacitance		C _{rss}		112		pF
Turn-On Delay Time	(V _{DD} = 250 V, I _D = 70 A, R _G = 25Ω) *	t _{d(on)}		46.2		ns
Rise Time		t _r		114.8		ns
Turn-Off Delay Time		t _{d(off)}		192.4		ns
Fall Time		t _f		129.7		ns
Total Gate Charge	(V _{DS} = 400 V, I _D = 70 A, V _{GS} = 10 V)*	Q _g		147.3		nC
Gate-Source Charge		Q _{gs}		40.3		nC
Gate-Drain Charge		Q _{gd}		58.4		nC
SOURCE-DRAIN DIODE CHARACTERISTICS						
Forward On-Voltage(1)	(I _S = 70 A, dI _S /d _t = 100A/μs)	V _{SD}			1.5	V
Forward Turn-On Time		t _{on}		**		ns
Reverse Recovery Time		t _{rr}		520		ns

* Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

** Negligible, Dominated by circuit inductance



TYPICAL ELECTRICAL CHARACTERISTICS

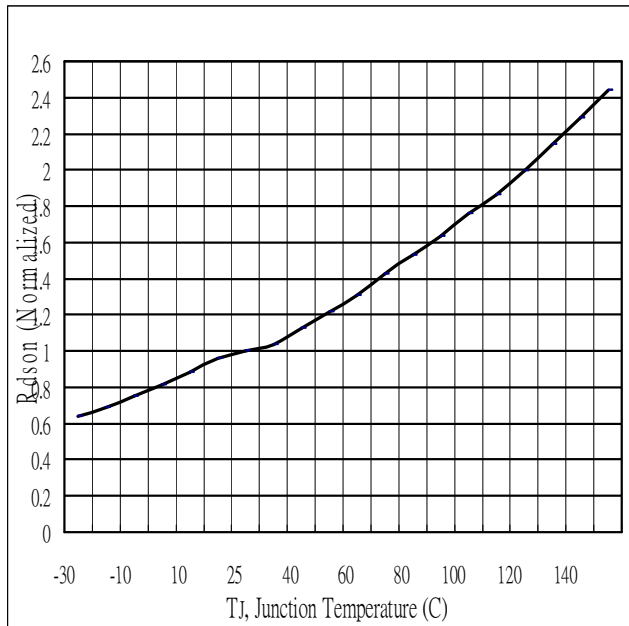


Fig 1. On-Resistance Variation with vs. Temperature

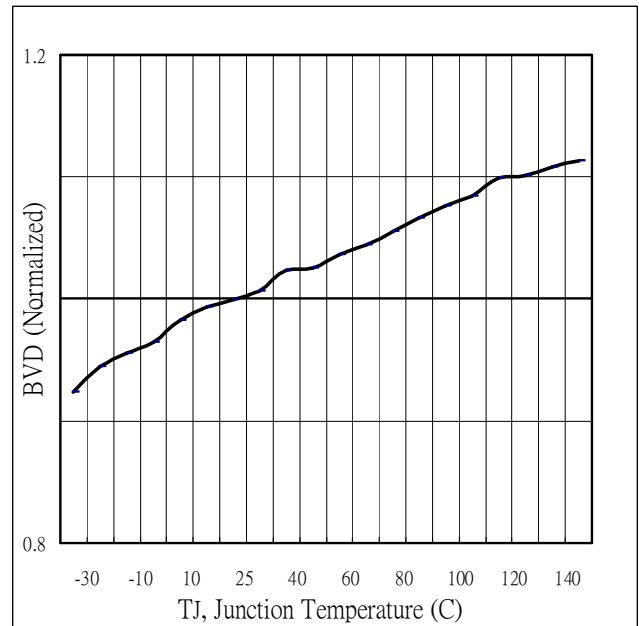


Fig.2 Breakdown Voltage Variation vs. Temperature

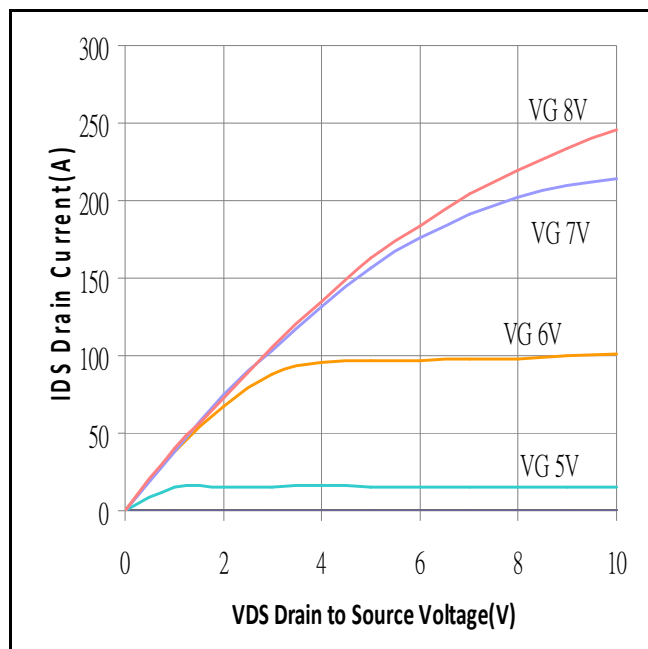


Fig 3. Typical Output Characteristics

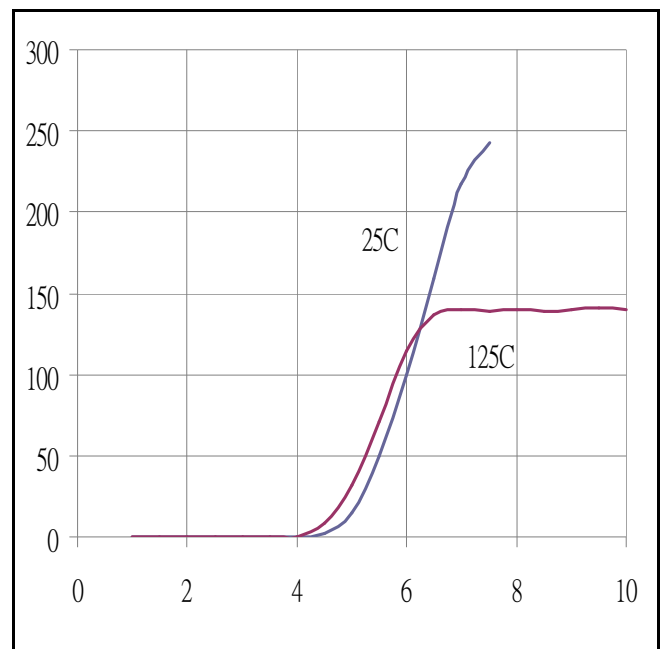


Fig 4. Typical Transfer Characteristics

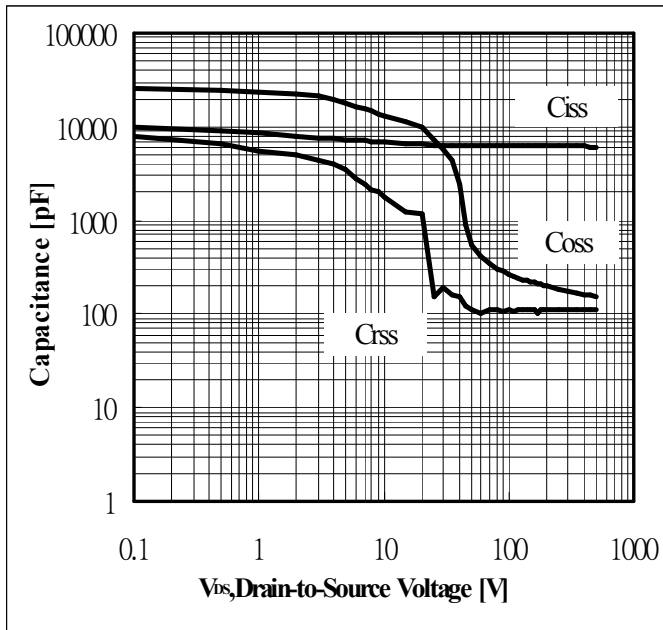


Fig 5. Typical Capacitance Vs. Drain-to-Source Voltage

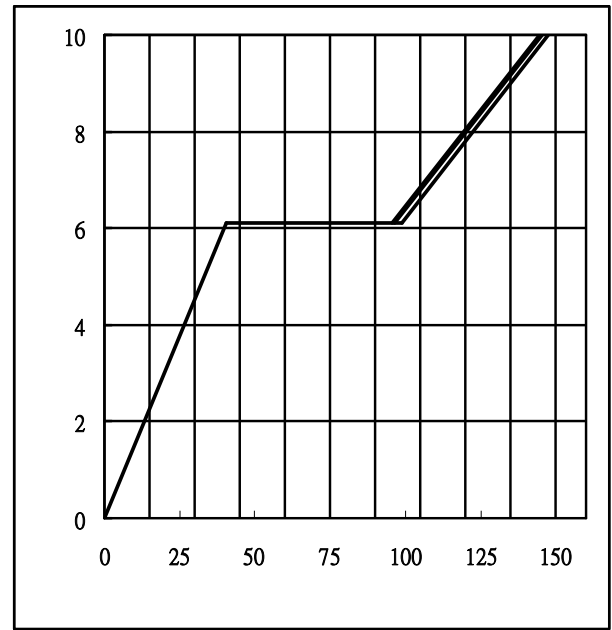


Fig 6. Typical Gate Charge Vs. Gate-to-Source Voltage