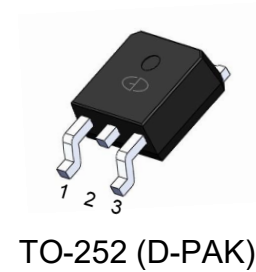


N-Channel 85V (D-S) Power MOSFET

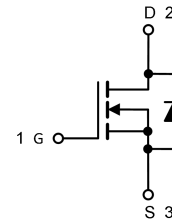
Features

- 100% Avalanche Tested
- Extremely Low Losses with Low FOM $R_{ds(on)} \cdot Q_g$
- Halogen Free, Pb-Free
- RoHS Compliant



Applications

- DC/DC
- Motors, lamps
- Power switching



Absolute Maximum Ratings ($T_J=25^\circ\text{C}$ unless otherwise noted)				
Parameter	Symbol	Value	Unit	
Drain Source Voltage	V_{DS}	85	V	
Gate Source Voltage	V_{GS}	± 20	V	
Drain Current, Continuous $V_{GS}=10\text{V}$ (Note 1)	I_D	120	A	
Drain Current, Pulsed (Note 2)		I_{DM}	480	A
Power Dissipation (Note 3)	P_D	220	W	
Single Pulse Avalanche Energy @ $L=0.5\text{mH}$		E_{AS}	400	mJ
Operating Junction/ Storage Temperature Range		T_J / T_{STG}	-55 to +150	$^\circ\text{C}$

Note 1: Calculated continuous current based on maximum allowable junction temperature.

Note 2: Repetitive rating; pulse width limited by max. junction temperature.

Thermal Resistance			
Parameter	Symbol	Max	Unit
Junction-to-case (Note 3)	$R_{\theta JC}$	0.7	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient (Note 4)	$R_{\theta JA}$	58	$^\circ\text{C}/\text{W}$

Note 3: The power dissipation P_D is based on max. junction temperature, using junction-to-case thermal resistance.

Note 4: The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

Electrical Characteristics (T_J =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	85	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =80V, V _{GS} =0V	--	--	1	uA
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _{DS} =250uA	2	--	4	V
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =20A	--	55	--	S
Drain-Source On-state Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A	--	4.7	5.2	mΩ
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =40V, I _D =50A	--	61	--	nC
Gate-Source Charge	Q _{gs}		--	21	--	
Gate-Drain Charge	Q _{gd}		--	11	--	
Turn-on Delay Time	t _{d(on)}	V _{GS} =10V, V _{DS} =30V, I _D =30A, R _{GEN} =3Ω	--	19	--	ns
Turn-on Rise Time	t _r		--	20	--	
Turn-off Delay Time	t _{d(off)}		--	35	--	
Turn-off Fall Time	t _f		--	10	--	
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =60V, f=1MHz	--	2635	--	pF
Output Capacitance	C _{oss}		--	531	--	
Reverse Transfer Capacitance	C _{rss}		--	5.9	--	

Reverse Diode Characteristics (T_J =25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Continuous Source Current (Body Diode)	I _S	T _C =25°C	--	--	125	A
Diode Forward Voltage	V _{SD}	I _S =50A, V _{GS} =0V	--	--	1.2	V
Reverse Recovery Time	T _{rr}	I _F =20A, di/dt = 100 A/μs	--	69	--	ns
Reverse Recovery Charge	Q _{rr}		--	141	--	nC

Typical Characteristics Curves ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Fig.1 - Output Characteristics

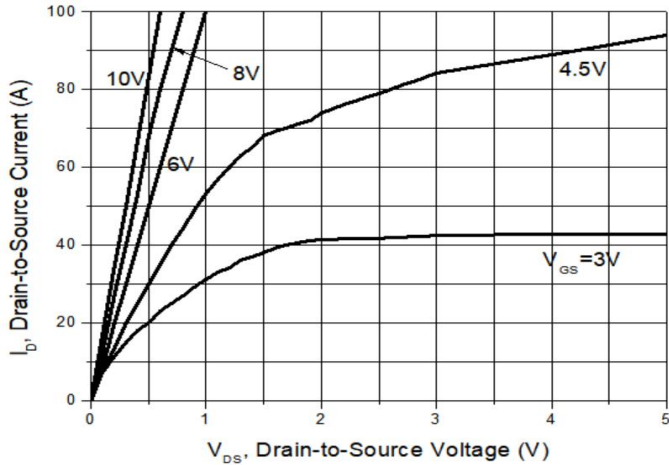


Fig.2 - Drain-to-Source Breakdown Voltage vs. Junction Temperature

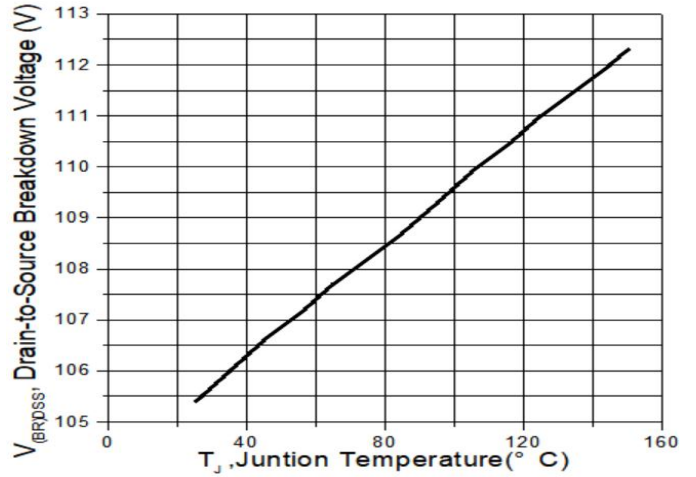


Fig.3 - On-Resistance vs. Junction Temperature

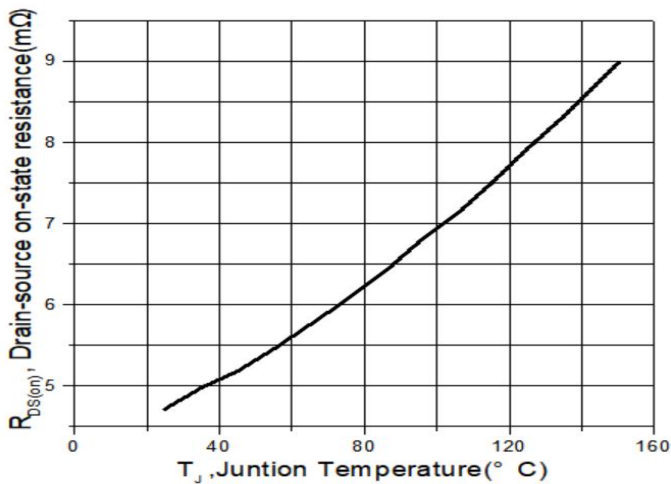


Fig.4 - $V_{GS(th)}$ vs. Junction Temperature

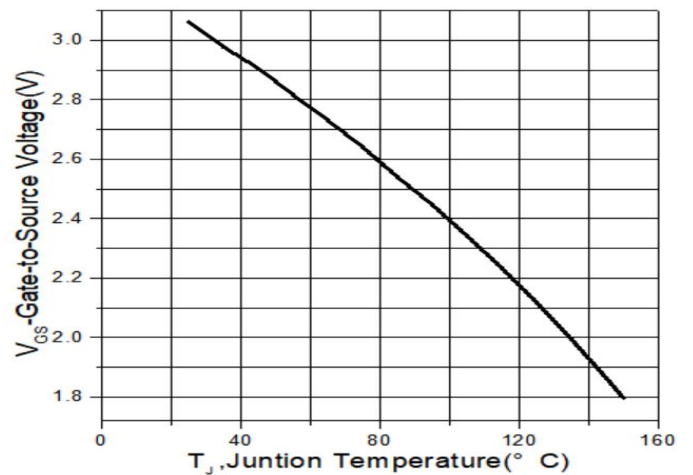


Fig.5 - Gate Charge Characteristics

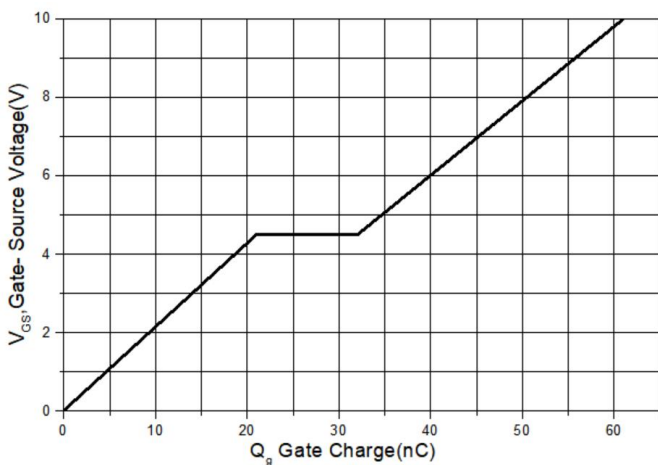
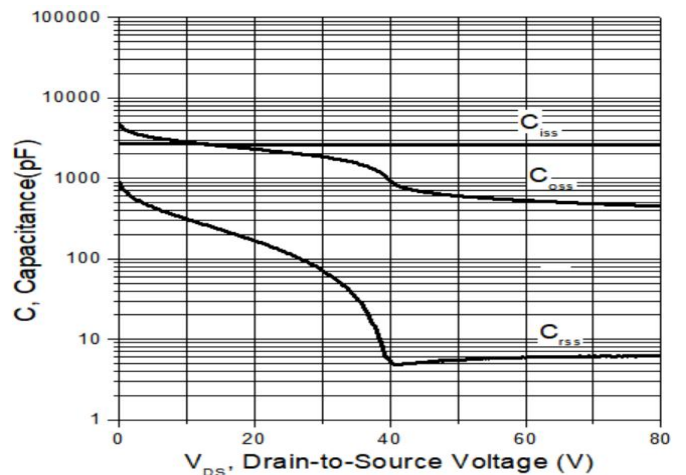


Fig.6 - Capacitance Characteristics



Typical Characteristics Curves ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Fig.7 - Transfer Characteristics

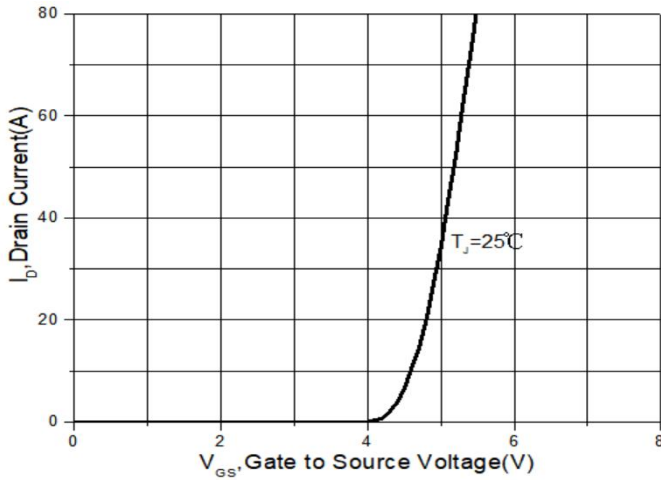


Fig.8 - Safe Operating Area

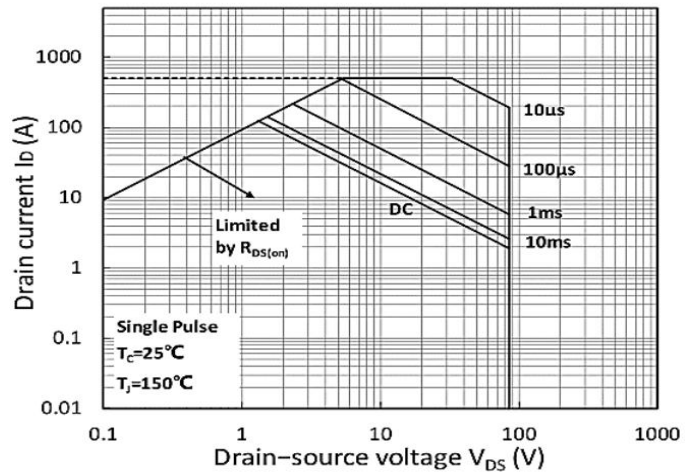
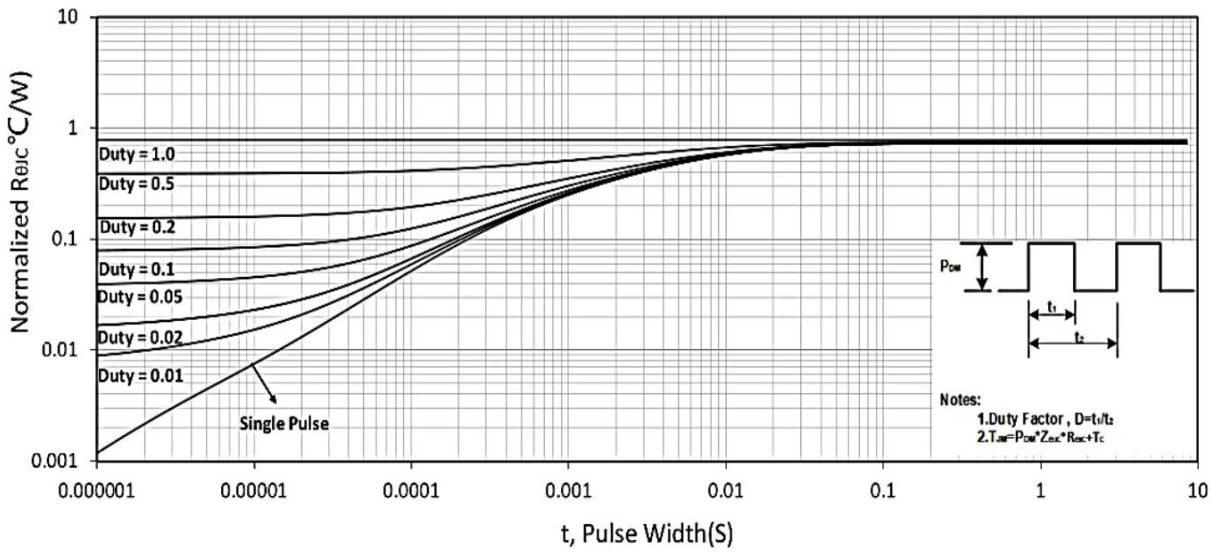
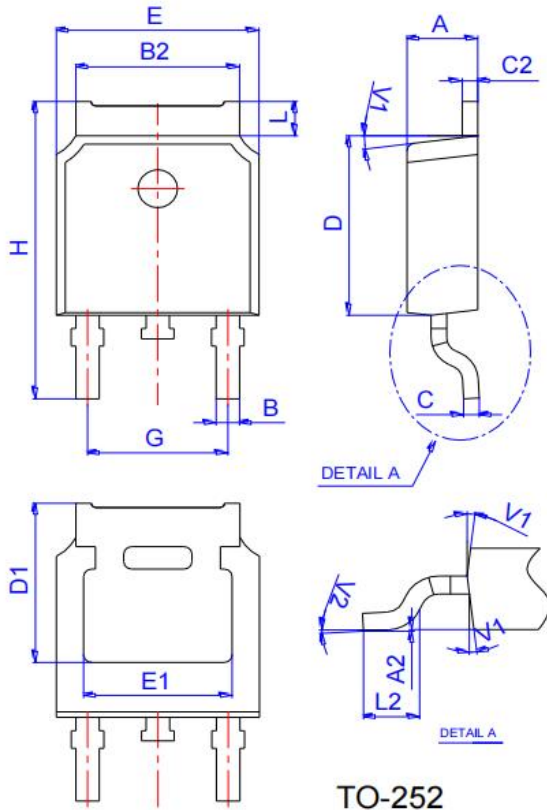


Fig.9 - Normalized Maximum Transient Thermal Impedance



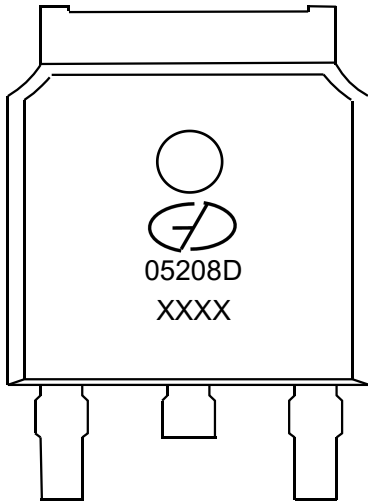
Package Outline Dimensions (Unit: millimeters)

TO-252(D-PAK)




Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Marking Outline



Part Name: GMN05208D

1. Logo Mark: 
2. P/N Mark: 05208D
3. Date Code: XXXX

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