

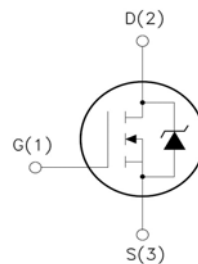
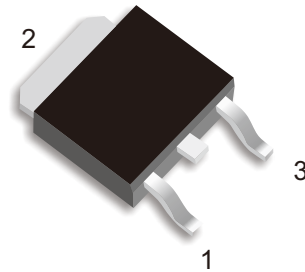
JSM3205S

60 V N-Channel MOSFET

Features:

- Low Intrinsic Capacitances.
- Excellent Switching Characteristics.
- Extended Safe Operating Area.
- Unrivalled Gate Charge : $Q_g=50$ nC (Typ.).
- $BVDSS=60$ V, $I_D=110$ A
- $R_{DS(on)}:7.0$ m Ω (typ.) @ $V_G=10$ V
- 100% Avalanche Tested

TO-263



1. Gate (G)
2. Drain (D)
3. Source (S)

Maximum Ratings

Parameter	Symbol	Value	Unit
Drain -source voltage	V_{DSS}	60	V
Continuous drain current $T_C = 25^\circ\text{C}$ (Package limit)	I_D	110	A
$T_C = 100^\circ\text{C}$ (Package limit)		54	
Pulsed drain current $T_C = 25^\circ\text{C}$, t_p limited by T_{jmax}	$I_{D\ pulse}$	340	
Avalanche energy, single pulse (L=0.033 mH, VDS=80V)	E_{AS}	360	mJ
Gate -emitter voltage	V_{GSS}	± 20	V
Power dissipation $T_C = 25^\circ\text{C}$	P_D	136	W
Operating junction and storage temperature	T_j, T_{stg}	-55... +150	$^\circ\text{C}$

Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal resistance, junction – case . Max	R_{thJC}	0.55	$^\circ\text{C}/\text{W}$
Thermal resistance, junction – ambient . Max	R_{thJA}	62.0	

Electrical Characteristic , at $T_j = 25\text{ }^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
Static Characteristic						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$ $T_j=25\text{ }^\circ\text{C}$ $T_j=125\text{ }^\circ\text{C}$	2.0 -	3	4.0 -	
Zero gate voltage drain current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$ $T_j=25\text{ }^\circ\text{C}$ $T_j=125\text{ }^\circ\text{C}$	- -	0.05	1 5	μA
Gate-source leakage current	I_{GSS}	$V_{GS}=20V, V_{DS}=0V$	-	1	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=50A$, $T_j=25\text{ }^\circ\text{C}$ $T_j=125\text{ }^\circ\text{C}$	- -	7.0	8.0 -	$m\Omega$
Transconductance	g_{fs}	$V_{DS}=30V, I_D=20A$	-	47	-	S

Dynamic Characteristic

Input Capacitance	C_{is}	$V_{GS}=0V, V_{DS}=50V$, $f=1MHz$	-	2368	-	pF
Output Capacitance	C_{oss}		-	307	-	
Reverse Transfer Capacitance	C_{rss}		-	197	-	
Gate Total Charge	Q_G	$V_{GS}=10V, V_{DS}=30V$, $I_D=50A, f=1MHz$	-	50	-	nC
Gate-source charge	Q_{gs}		-	13.9	-	
Gate-drain charge	Q_{gd}		-	20.5	-	
Turn-on delay time	$t_{d(on)}$	$T_j=25\text{ }^\circ\text{C}, V_{GS}=10V$, $V_{DS}=30V, R_L=2.7\Omega$		21.3		ns
Rise time	t_r			17.2		
Turn-off delay time	$t_{d(off)}$			44		
Fall time	t_f			13.4		
Gate resistance	R_G	$V_{GS}=0V, V_{DS}=0V$, $f=1MHz$	-	1.4	-	Ω

Body Diode Characteristic

Body Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{SD}=50A$	-	0.85	1.3	V
Body Diode Reverse Recovery Time	t_{rr}	$I_F=50A$, $di/dt=500A/\mu s$		38		ns
Body Diode Reverse Recovery Charge	Q_{rr}	$I_F=50A$, $di/dt=500A/\mu s$		69.6		nC

Characteristics Curve :

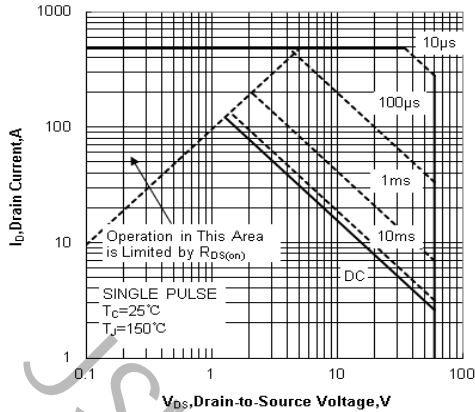


Figure1. Maximum Forward Bias Safe Operating Area

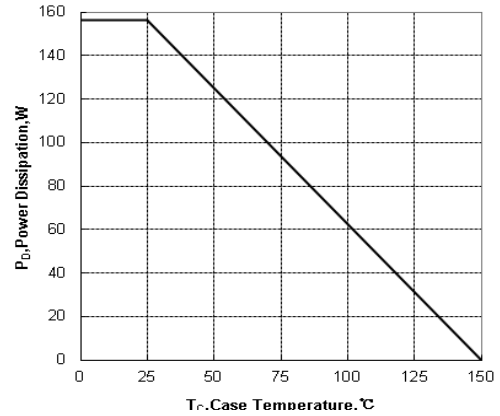


Figure2. Maximum Power Dissipation vs Case Temperature

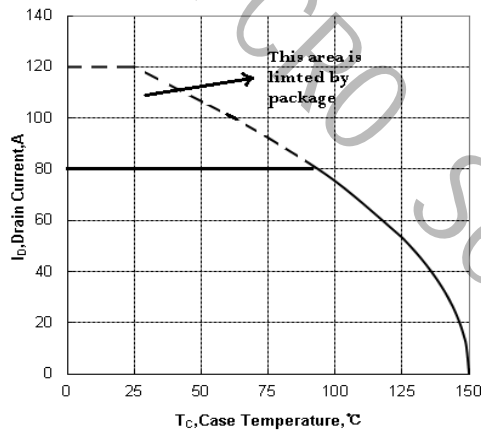


Figure3. Maximum Continuous Drain Current vs Case Temperature

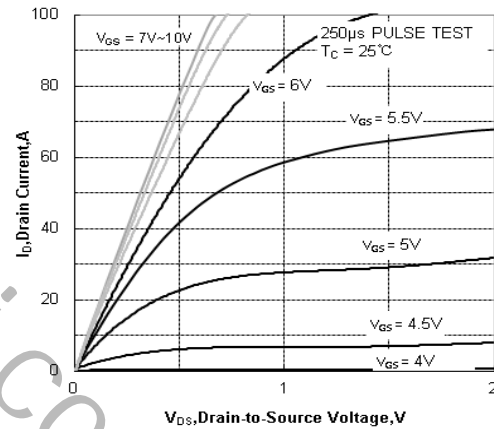
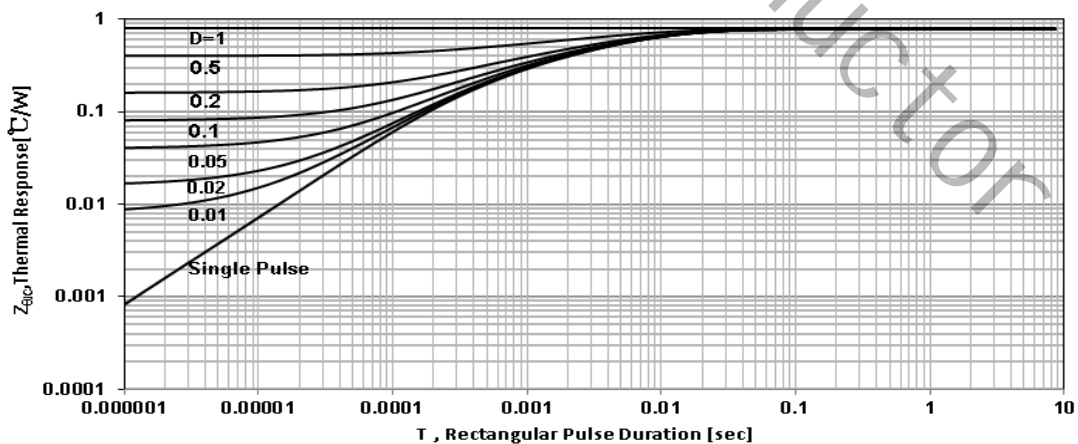


Figure 4. Typical Output Characteristics



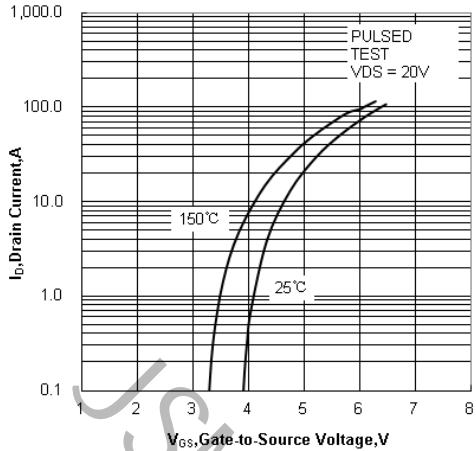


Figure 6. Typical Transfer Characteristics

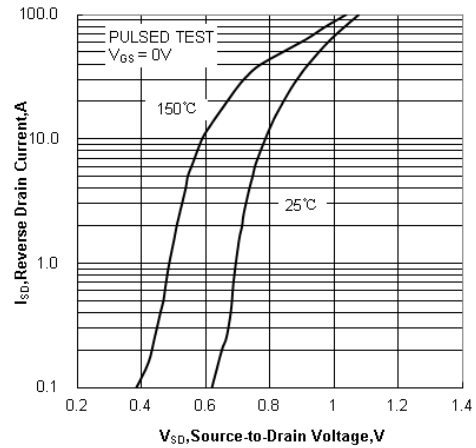


Figure 7. Typical Body Diode Transfer Characteristics

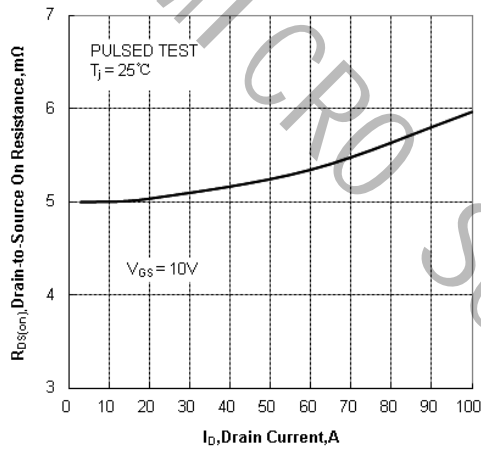


Figure 8. Drain-to-Source On Resistance vs Drain Current

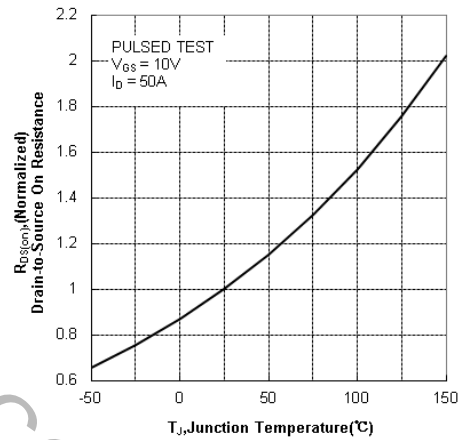


Figure 9. Normalized on Resistance vs Junction Temperature

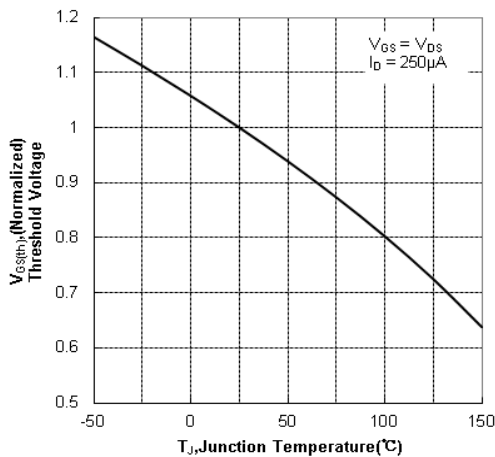


Figure 10. Normalized Threshold Voltage vs Junction Temperature

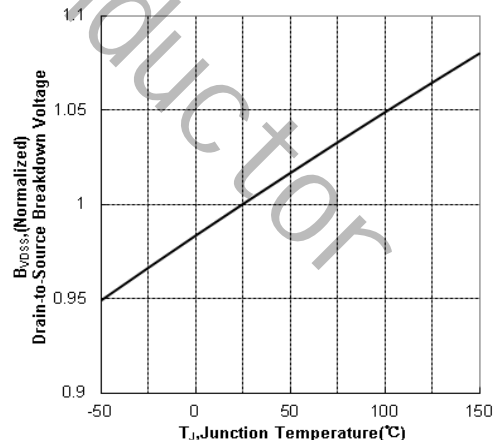


Figure 11. Normalized Breakdown Voltage vs Junction Temperature

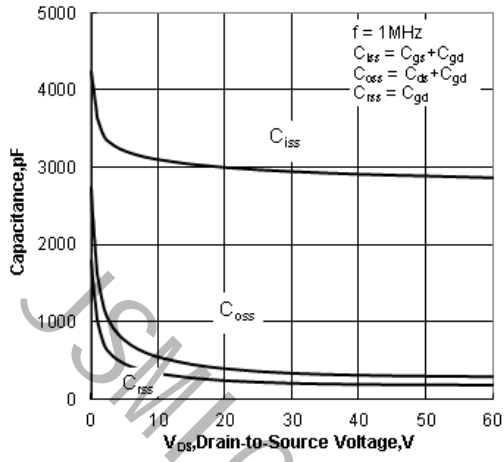


Figure12. Capacitance Characteristics

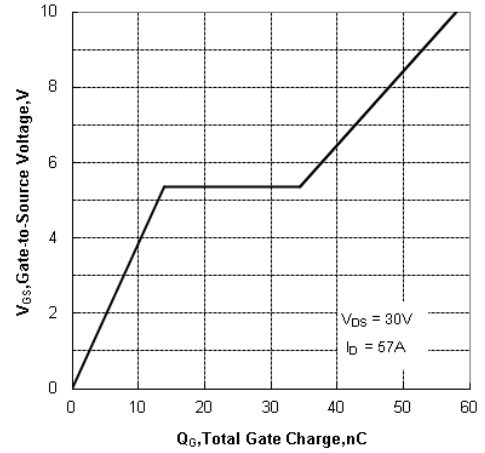
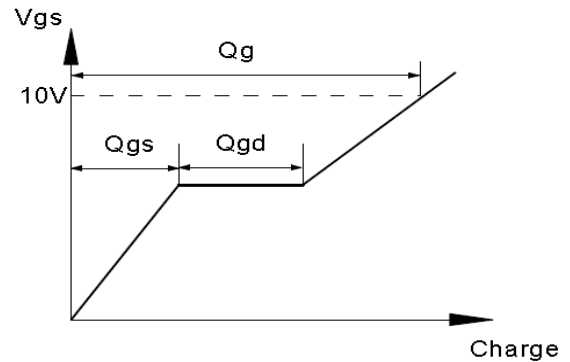
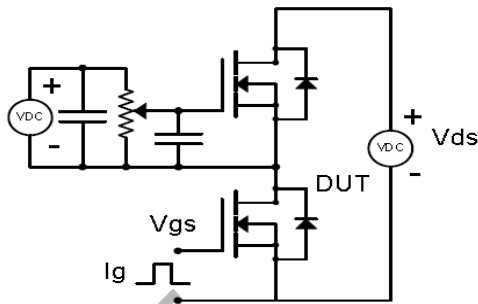
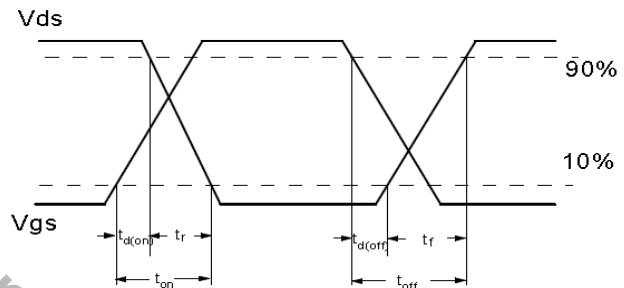
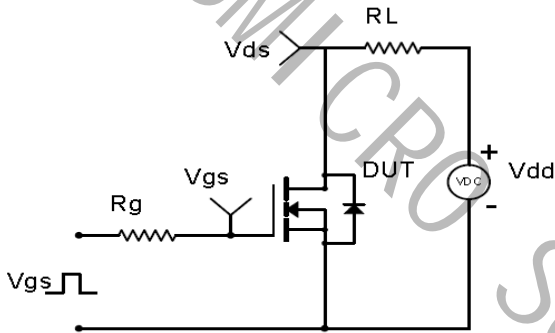
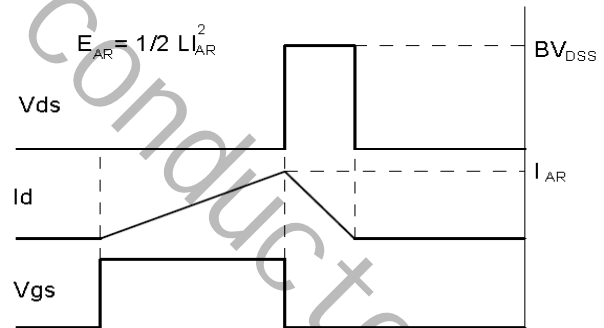
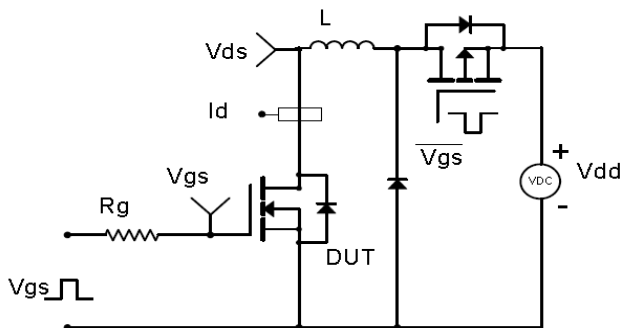
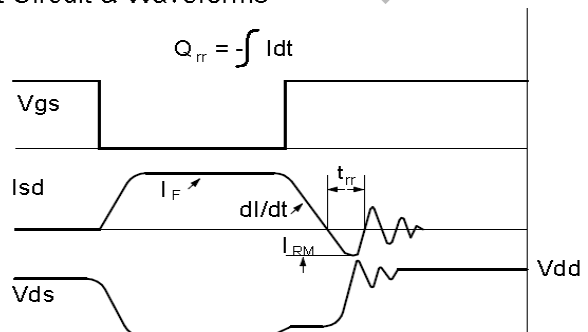
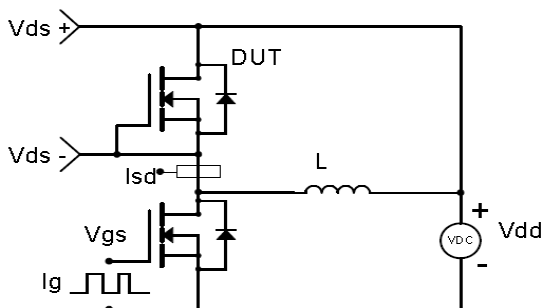


Figure13. Typical Gate Charge vs Gate to Source Voltage

Test Circuit & Waveform
Gate Charge Test Circuit & Waveform

Resistive Switching Test Circuit & Waveforms

Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

Diode Recovery Test Circuit & Waveforms


Package Dimension

TO-263

