



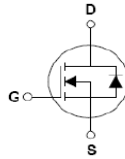
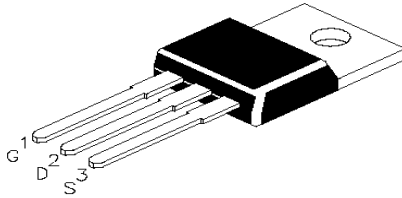
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An ISO/TS 16949, ISO 9001 and ISO 14001 Certified Company



N-Channel Enhancement Mode Power MOSFET

CD3205

TO-220
Plastic Package



FEATURES:

- Lead Free
- Low $R_{DS(ON)}$ to Minimize Conductive Loss
- Low Gate Charge for Fast Switching Applications
- Optimized $B_{V_{DSS}}$ Capability

ABSOLUTE MAXIMUM RATINGS

$T_c=25^\circ\text{C}$ Unless otherwise specified

PARAMETER	SYMBOL	VALUE	UNIT
Drain - Source Voltage	V_{DSS}	60	V
Drain Current Continuous	I_D^a	110	A
Drain Current - Pulsed @ $V_G=10\text{V}$	I_{DM}	439	A
Power Dissipation	P_D	156	W
Derating Factor above 25°C		1.04	W/ $^\circ\text{C}$
Gate-to-Source Voltage	V_{GS}	+/-20	V
Single Pulsed Avalanche Energy (L=1mH)	E_{AS}	400	mJ
Pulsed Avalanche Energy	I_{AS}	Figure 9	A
Operating Junction Range	T_J	-55 to +175	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +175	$^\circ\text{C}$

THERMAL RESISTANCE

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Junction-to-case	$R_{\theta JC}$	Water cooled heatsink, PD adjusted for a peak junction Temperature of 175°C			1.0	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS

Off Characteristics

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

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain - Source Breakdown Voltage	$B_{V_{DSS}}$	$V_{GS}=0\text{V}$, $I_D=250\mu\text{A}$	60			V
Drain - Source Leakage Current	I_{DSS}	$V_{DS}=48\text{V}$, $V_{GS}=0\text{V}$			1	μA
Drain - Source Leakage Current	I_{DSS}	$V_{DS}=48\text{V}$, $V_{GS}=0\text{V}$, $T_J=125^\circ\text{C}$			100	μA
Gate - Source Forward Leakage	$I_{GSS(F)}$	$V_{GS}=+20\text{V}$			100	nA
Gate - Source Reverse Leakage	$I_{GSS(R)}$	$V_{GS}=-20\text{V}$			100	nA



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On Characteristics

T_j=25°C Unless otherwise specified

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	2.0		4.0	V
Static Drain - Source On - Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =24A		6.5	8.0	m Ohm

Dynamic Characteristics

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Input Capacitance	C _{iss}	V _{DS} =55V, V _{GS} =0V, f=1MHz		3396		pF
Output Capacitance	C _{oss}			435		pF
Reverse Transfer Capacitance	C _{rss}			151		pF
Total Gate Charge	Q _g	V _{DD} =30V, V _{GS} =10V, I _D =55A		51		nC
Gate to Source Charge	Q _{gs}			22		nC
Gate to Drain ("Miller") Charge	Q _{gd}			15		nC
Turn-in Delay Time	T _{d(on)}	V _{DD} =30V, I _D =55A, V _G =10V, R _G =2.5 ?		14		ns
Rise Time	T _r			44		ns
Turn-Off Delay Time	T _{d(off)}			31		ns
Fall Time	T _f			12		ns

Source Diode Characteristics

T_j=25°C Unless otherwise specified

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =24A			1.2	V
Reverse Recovery Time	T _{rr}	I _S =38A, di/dt=100A/μs			78.5	nS
Reverse Recovery Charge	Q _{rr}				112	nC

Figure 1. Maximum Power Dissipation V.S Case Temperature

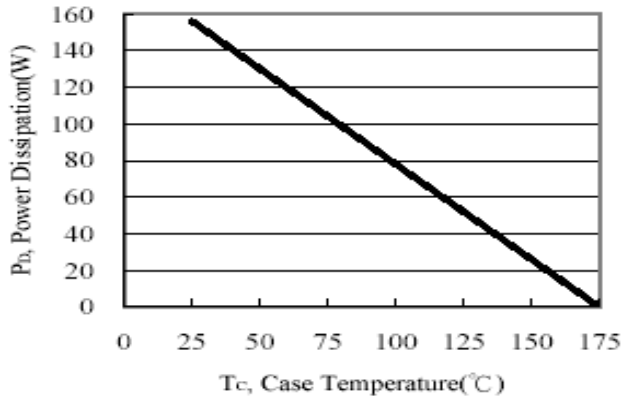


Figure 2. Maximum Continuous Drain Current V.S Case Temperature

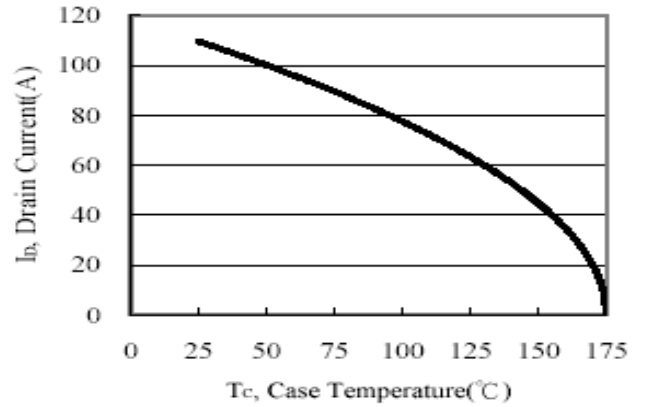


Figure 3. Typical Output Characteristics

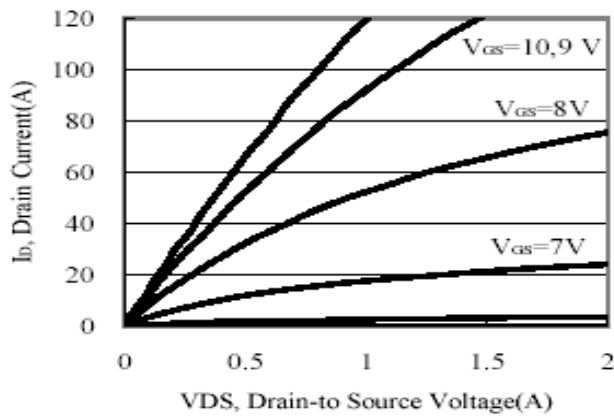


Figure 4. Breakdown Voltage V.S Junction Temperature

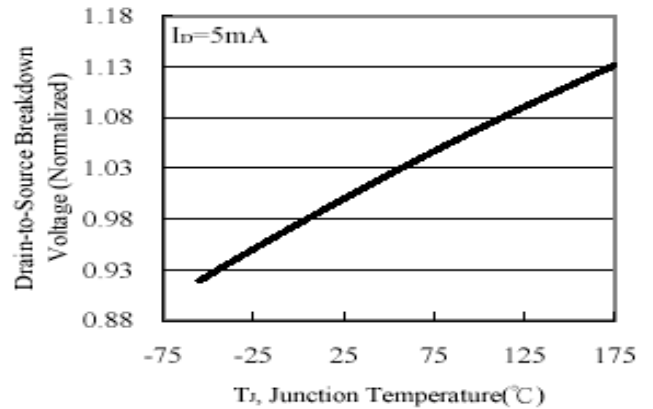


Figure 5. Threshold Voltage V.S Junction Temperature

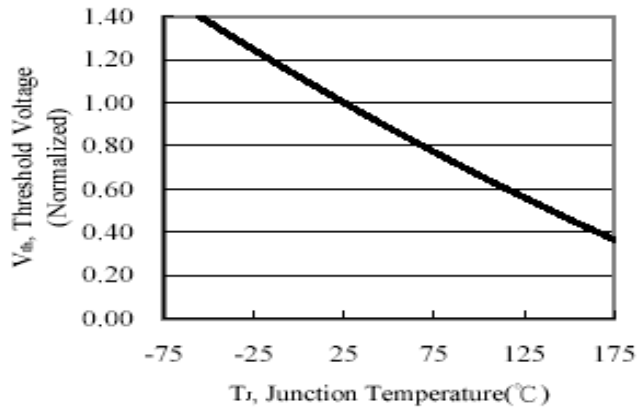
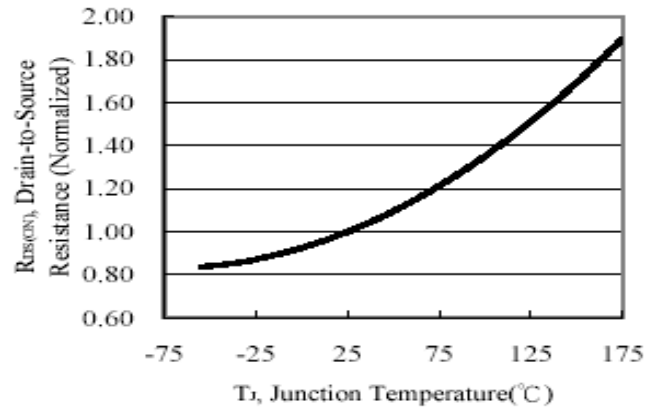


Figure 6. Drain-to-Source Resistance V.S Junction Temperature





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Figure 7. Typical Gate Charge vs. Gate-to-Source Voltage

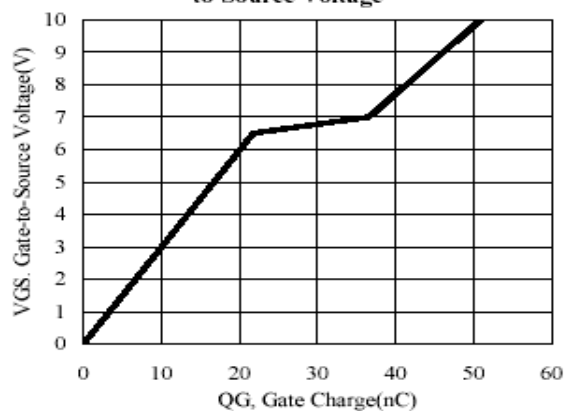


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

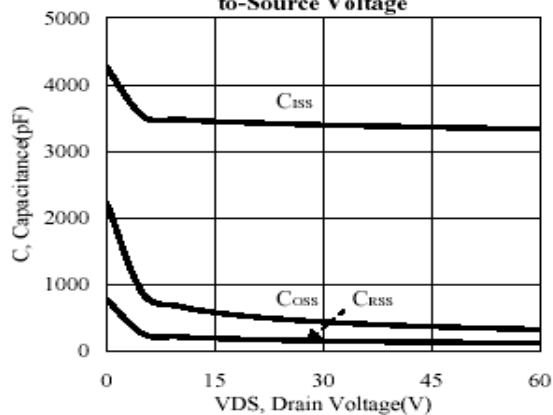


Figure 9. Unclamped Inductive Switching Capability

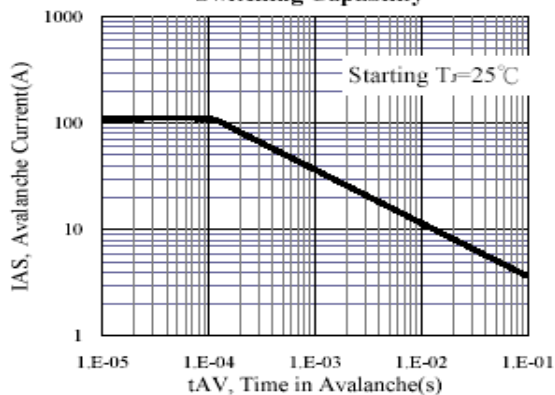
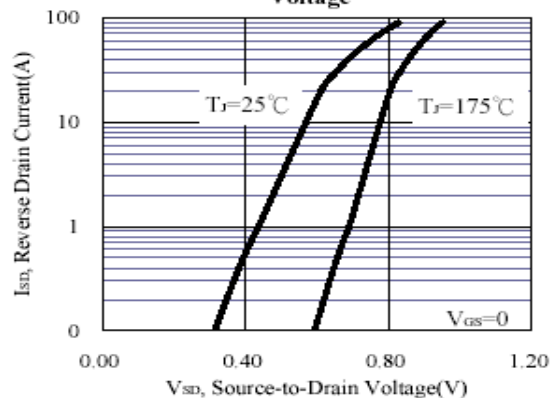


Figure 10. Source-Drain Diode Forward Voltage





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