

**FEATURES:**

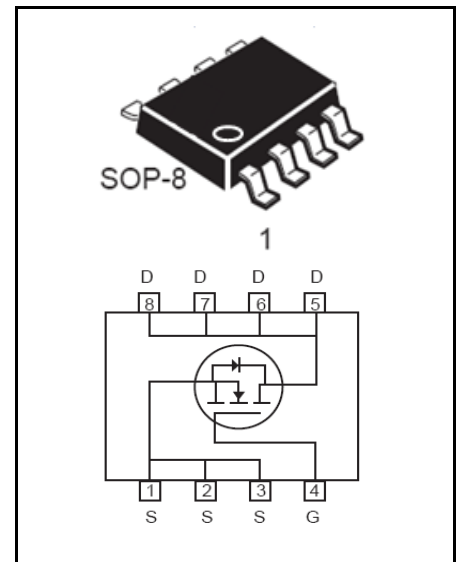
- ADVANCED TRENCH MOSFET PROCESS TECHNOLOGY
- SPECIAL DESIGNED FOR PWM, LOAD SWITCHING AND GENERAL PURPOSE APPLICATIONS
- ULTRA LOW NO-RESISTANCE WITH LOW GATE CHARGE
- FAST SWITCHING AND REVERSE BODY RECOVERY
- 175°C OPERATING TEMPERATURE

**DESCRIPTION**

It utilizes the latest trench processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications

**MAXIMUM RATINGS (T<sub>c</sub>=25°C)**

PARAMETER	SYMBOL	VALUE	UNIT
Drain-source Voltage	V <sub>DS</sub>	60	V
gate-source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current (T <sub>C</sub> =25°C)	I <sub>D</sub>	14	A
Drain Current-Pulsed	I <sub>DM</sub>	56	A
Total Dissipation	PD	3.1	W
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55-150	°C
Single Pulse Avalanche Energy (L=0.4mH)	EAS	125	mJ

**MECHANICAL**

**ELECTRONIC CHARACTERISTICS (T<sub>c</sub>=25°C)**

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN	MAX	UNIT
Drain-source Breakdown Voltage	BVDSS	V <sub>GS</sub> =0V, I <sub>D</sub> =250 μA	60		V
Gate Threshold Voltage	V <sub>GS</sub> (TH)	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250 μA	1	2.4	V
Drain-source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =60V, V <sub>GS</sub> =0V		1	uA
Drain-Source Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =10A		1.2	V
Gate-body Leakage Current (V <sub>DS</sub> = 0)	I <sub>GSS</sub>	V <sub>GS</sub> =±20V		±100	nA
Static Drain-source On Resistance	R <sub>DS</sub> (ON)	V <sub>GS</sub> =4.5V I <sub>D</sub> =10A		13	mΩ
		V <sub>GS</sub> =10V I <sub>D</sub> =14A		9	mΩ
Thermal Resistance Junction-case	R <sub>thJ-C</sub>			40.3	°C/W

**■ DYNAMIC CHARACTERISTICS (T<sub>c</sub>=25°C)**

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =35V, V <sub>GS</sub> =0V, f=1.0MHZ	-	1650	-	pF
output Capacitance	C <sub>oss</sub>		-	400	-	pF
Reverse Transfer Capacitance	C <sub>rss</sub>		-	5	-	pF
Gate resistance	R <sub>G</sub>	V <sub>gsDCBias</sub> =0V, Speed=MED	-	2.5	-	Ω

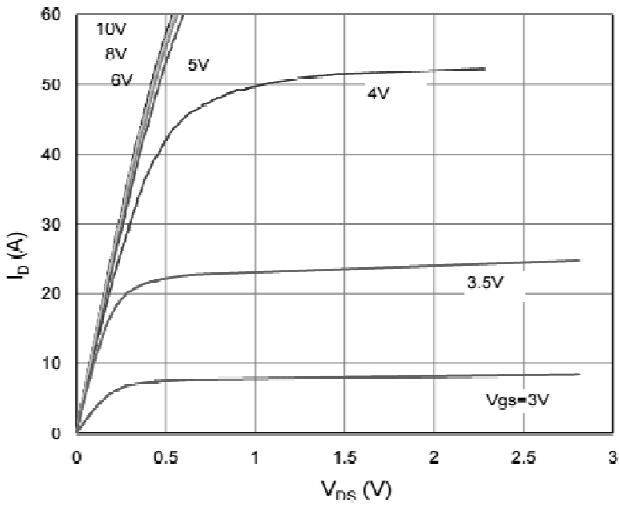
**■ SWITCHING CHARACTERISTICS (T<sub>c</sub>=25°C)**

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =30V, I <sub>D</sub> =14A, V <sub>GS</sub> =10V, R <sub>G</sub> =10Ω	-	9	-	ns
Turn-On Rise Time	t <sub>r</sub>		-	4	-	ns
Turn-Off Delay Time	t <sub>d(off)</sub>		-	29	-	ns
Turn-Off Rise Time	t <sub>f</sub>		-	4	-	ns
Total Gate Charge	Q <sub>g</sub> (4.5V)	V <sub>DS</sub> =30V, I <sub>D</sub> =14A, V <sub>GS</sub> =10V	-	12	-	nC
Total Gate Charge	Q <sub>g</sub>		-	24	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	4.8	-	nC
Gate-Drain Charge	Q <sub>gd</sub>		-	3	-	nC

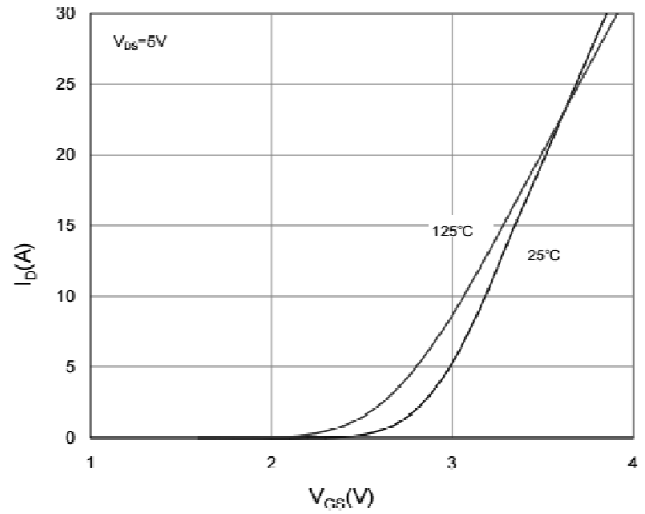
**■ DRAIN-SOURCE DIODE MAXIMUM RATINGS AND CHARACTERISTICS (T<sub>c</sub>=25°C)**

CHARACTERISTICS	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =10A	-	-	1.2	V
Reverse Recovery Time	t <sub>rr</sub>	V <sub>R</sub> =30V, I <sub>F</sub> =14A, di/dt=300A/μs	-	30	-	ns
Reverse Recovery Charge	Q <sub>rr</sub>		-	43	-	nC

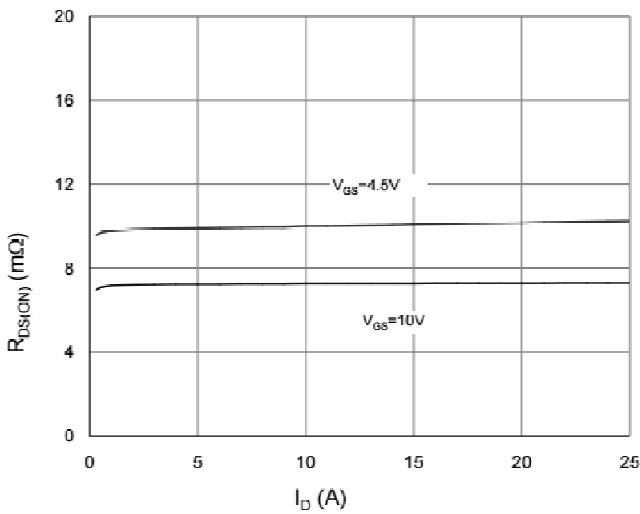
**CHARACTERISTICS CURVE**



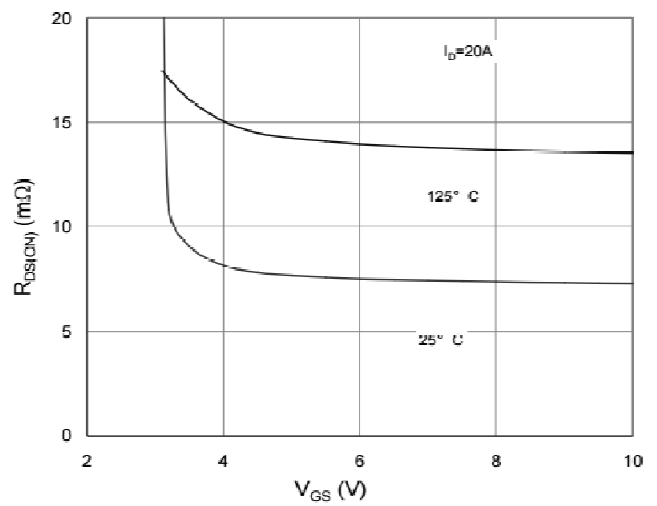
**Output Characteristics**



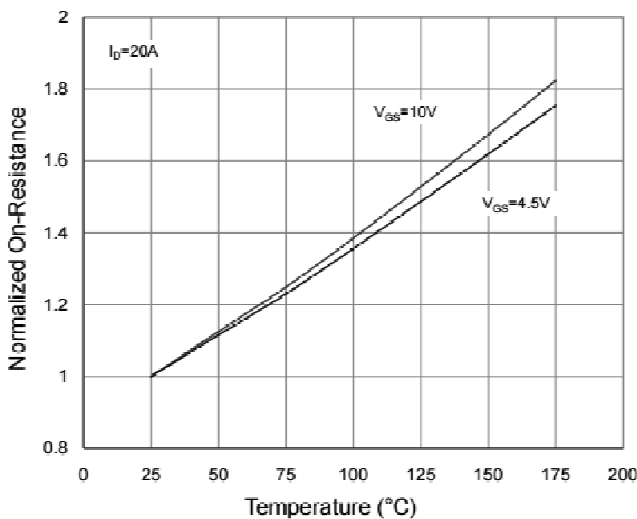
**Transfer Characteristics**



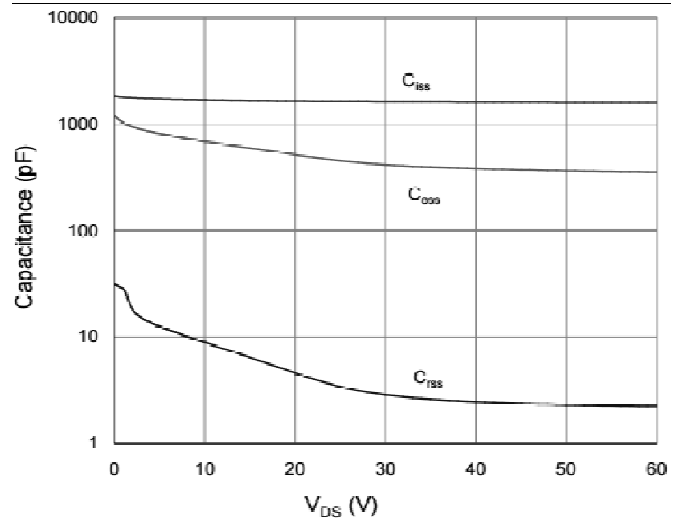
**On Resistance Vs Drain Current**



**On Resistance Vs Gate Source Voltage**

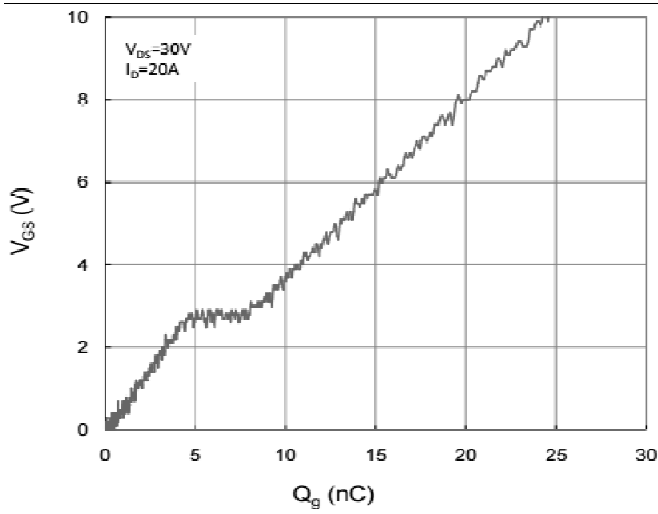


**Rdson-Junction Temperature**

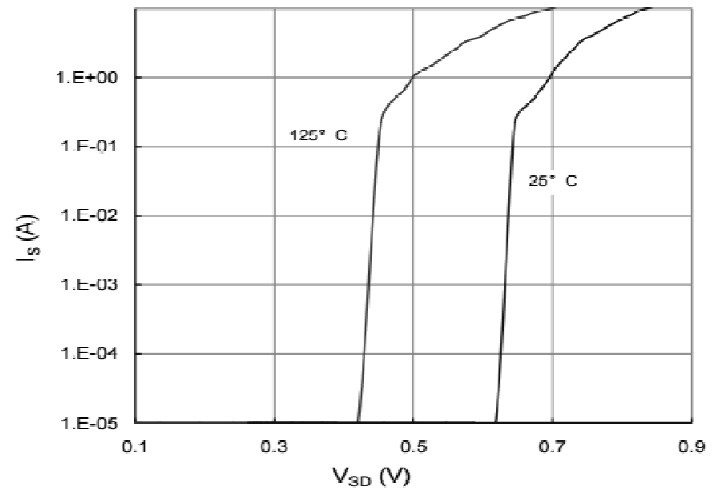


**Capacitance**

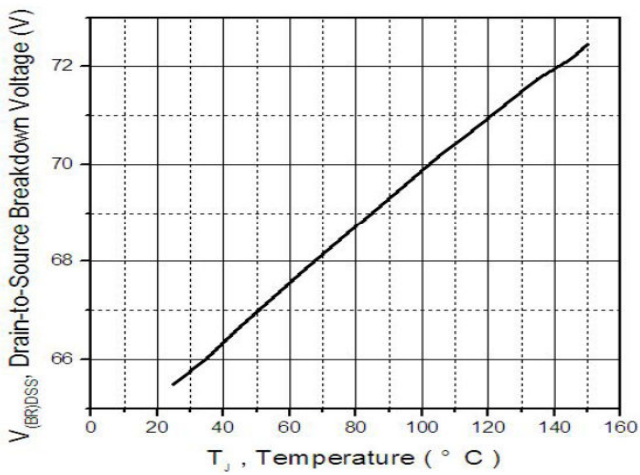
**CHARACTERISTICS CURVE**



**Gate Charge Waveform**



**Source-Drain Diode Forward Voltage**



**Breakdown Voltage Vs Junction Temperature**

SOP-8 MECHANICAL DATA

UNIT: mm

SYMBOL	MIN	NOM	MAX	SYMBOL	MIN	NOM	MAX
A	1.35		1.75	E	3.80		4.00
A1	0.10		0.25	E1	5.80		6.20
A2	1.35		1.55	e		1.27	
b	0.33		0.51	L	0.40		1.27
c	0.17		0.25	$\theta$	0°		8°
D	4.70		5.10				

