

SED3022M

**N-Channel Enhancement-Mode MOSFET**

Revision: A

**General Description**

This type used advanced trench technology and design to provide excellent RDS(ON) with low gate charge. It can be used in a wide variety of application

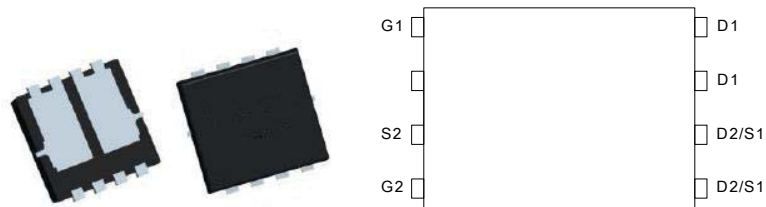
**Features**

For a single MOSFET

- $V_{DS} = 30V$
- $R_{DS(ON)} = 16m\Omega @ V_{GS}=10V$

**Pin configurations**

See Diagram below



**Absolute Maximum Ratings**

Parameter	Symbol	Rating	Units
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current	Continuous	20	A
	Pulsed	67	
Total Power Dissipation	@TA=25°C	36	W
Single pulse avalanche energy	$E_{AS}$	72	mJ
Operating Junction Temperature Range	$T_J$	-55 to 175	°C

**Thermal Resistance**

Symbol	Parameter	Typ	Max	Units
$R_{\theta JC}$	Thermal Resistance Junction to Case	-	3	°C/W

**SED3022M**

<b>Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)</b>						
<b>Symbol</b>	<b>Parameter</b>	<b>Test Conditions</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>	<b>Units</b>
<b>OFF CHARACTERISTICS (Note 2)</b>						
B <sub>V</sub> DSS	Drain-Source Breakdown Voltage	I <sub>D</sub> =250μA, V <sub>GS</sub> =0 V	30			V
I <sub>DSS</sub>	Drain to Source Leakage Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =20V			100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1		2.5	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =15A	-	16	20	mΩ
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =60V, I <sub>D</sub> =7.5A	26			S
<b>DYNAMIC PARAMETERS</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =15V, f=1MHz		680		pF
C <sub>oss</sub>	Output Capacitance			102		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			71		pF
<b>SWITCHING PARAMETERS</b>						
Q <sub>g</sub>	Total Gate Charge <sup>2</sup>	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, I <sub>D</sub> =20A		17.5		nC
Q <sub>gs</sub>	Gate Source Charge			43		nC
Q <sub>gd</sub>	Gate Drain Charge			4.1		nC
t <sub>d(on)</sub>	Turn-On Delay Time	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, R <sub>GEN</sub> =3Ω I <sub>D</sub> =20A		5		ns
t <sub>d(off)</sub>	Turn-Off Delay Time			19		ns
t <sub>d(r)</sub>	Turn-On Rise Time			12		ns
t <sub>d(f)</sub>	Turn-Off Fall Time			6		ns
<b>Source-Drain Diode Characteristics</b>						
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =24A			1.2	V
I <sub>S</sub>	Diode Forward Current				30	A
t <sub>rr</sub>	Reverse Recovery Time	T <sub>J</sub> =25°C, I <sub>F</sub> =20A		19		nS
Q <sub>rr</sub>	Reverse Recovery Charge	Di/dt=100A/μs		10		nC
t <sub>on</sub>	Forward Turn-On Time	Intrinsic turn-on time is negligible(turn-on is dominated by LS)				

Typical Characteristics

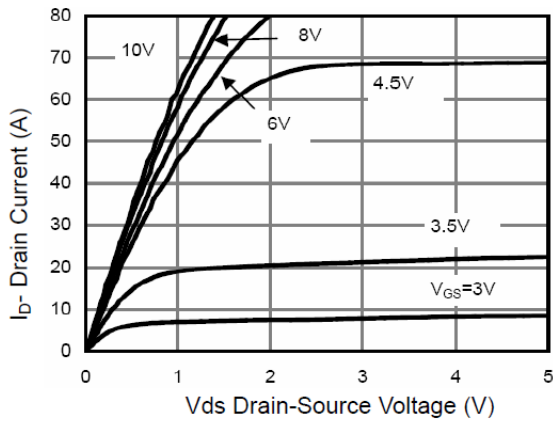


Figure 1 Output Characteristics

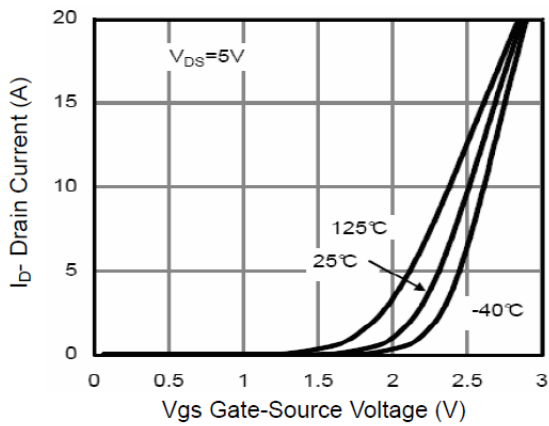


Figure 2 Transfer Characteristics

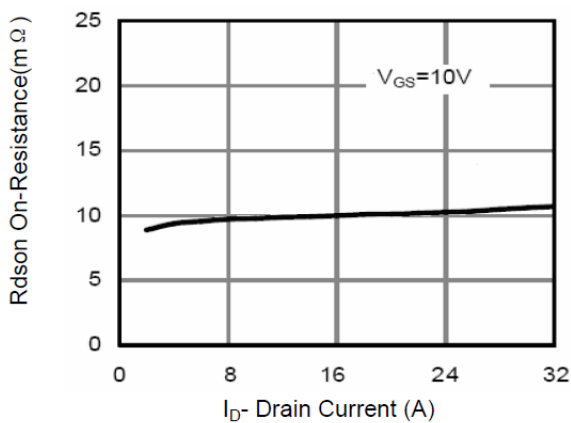


Figure 3 Rds(on)- Drain Current

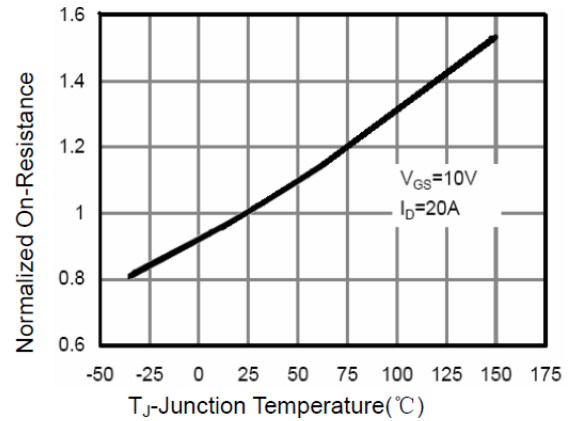


Figure 4 Rds(on)-Junction Temperature

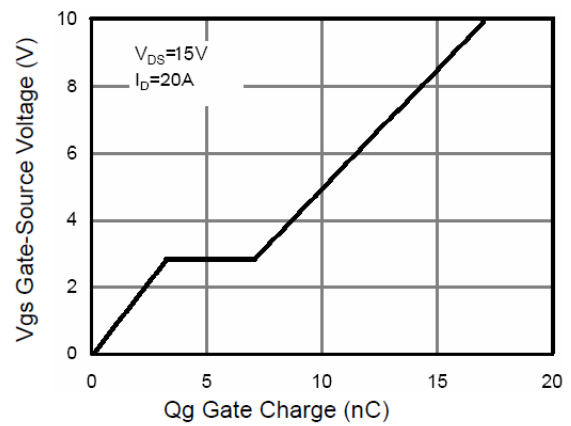


Figure 5 Gate Charge

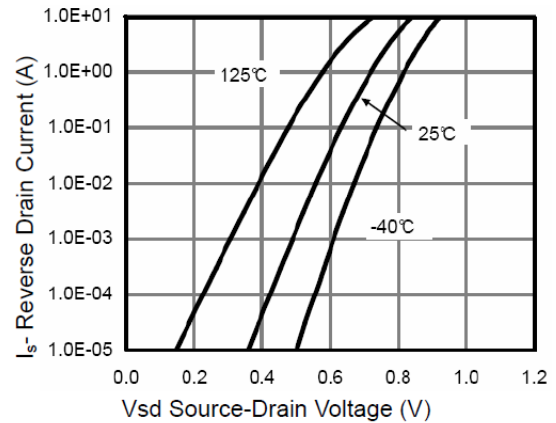


Figure 6 Source- Drain Diode Forward

Typical Characteristics

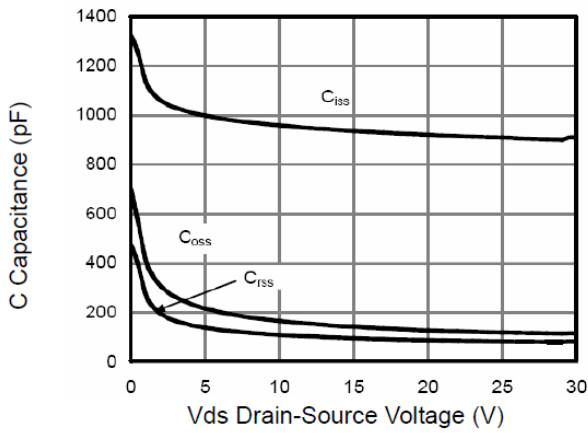


Figure 7 Capacitance vs Vds

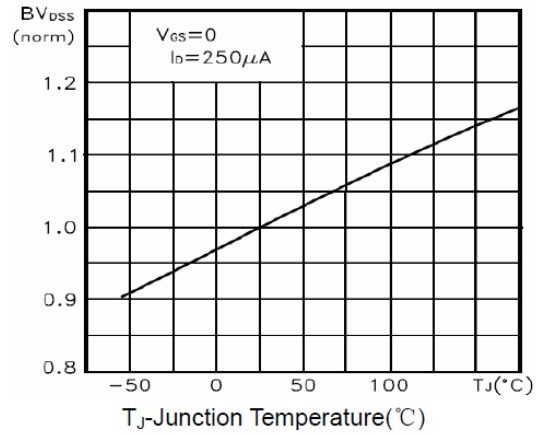


Figure 9  $BV_{DSS}$  vs Junction Temperature

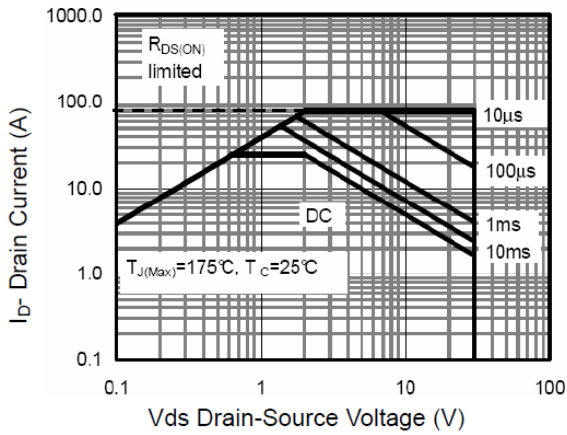


Figure 8 Safe Operation Area

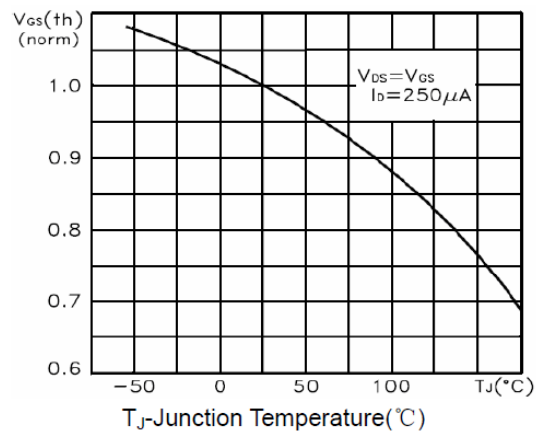


Figure 10  $V_{GS(th)}$  vs Junction Temperature

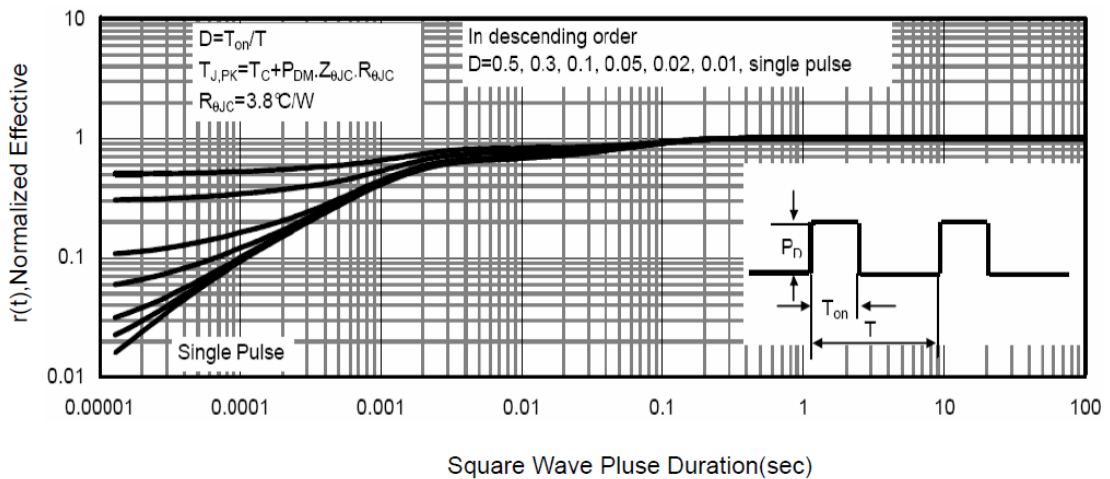
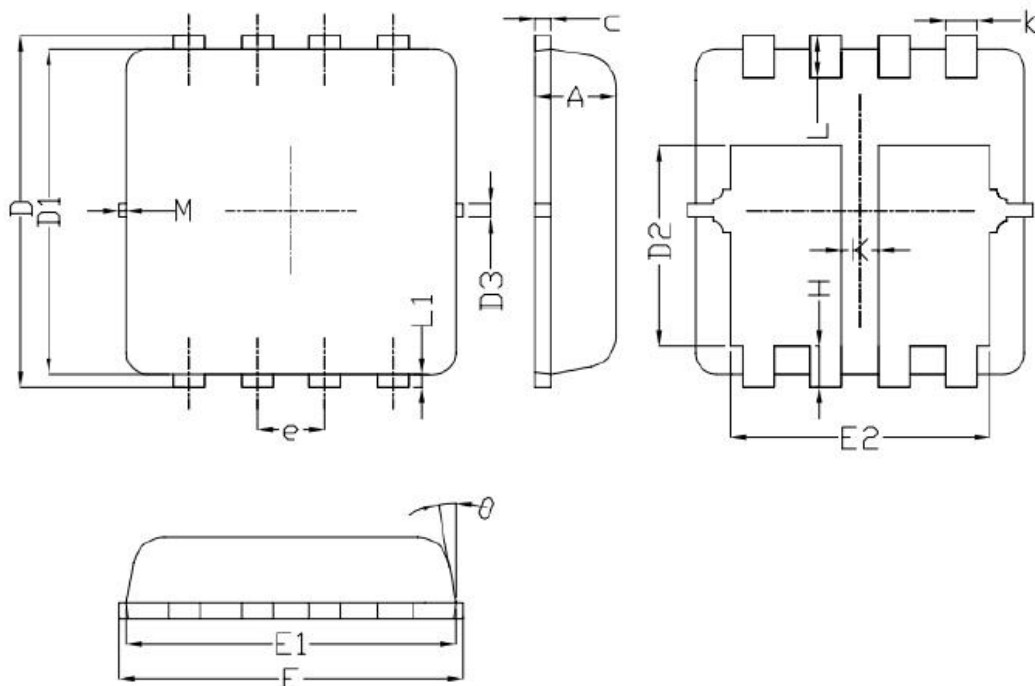


Figure 11 Normalized Maximum Transient Thermal Impedance

# SED3022M

## Package Outline Dimension

### DFN3X3M



Symbol	Dimensions (unit: mm)		
	Min	Typ	Max
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.78	1.88	1.98
D3	--	0.13	--
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65 BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	--	0.13	--
K	0.30	--	--
theta	--	10°	12°
M	*	*	0.15

\* Not Specified

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