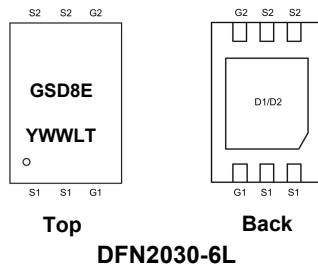


Product Summary

V_{DS} (V)	$R_{DS(on),max}$ (mΩ)	I_D (A)
20	7.2 @ $V_{GS} = 4.5V$	12

View and Internal Schematic Diagram



NOTE:
 LOGO - GS
 D8E- Part number code
 Y - Year code
 WW - Week code
 L&T - Assembly lot code

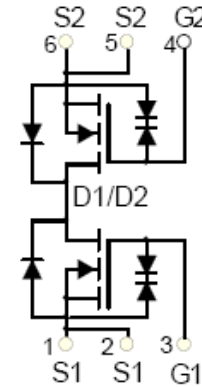
Features

- High power and current handling capability
- Lead free product is acquired
- Surface mount package
- ESD protected

Application

- Uni-directional load switch
- Bi-directional load switch

Equivalent circuit



Absolute maximum rating@25°C

Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{DS}	20	V
Gate-source voltage	V_{GS}	±12	
Continuous drain current ($V_{GS}=4.5V$) $T_c=25^\circ C$	I_D	12	A
Pulsed drain current ^(d)	$I_{D,pulse}$	48	A
Power dissipation $T_A=25^\circ C$	P_D	2	W
Operating junction and storage temperature range	T_J, T_{stg}	-55 to 150	°C

Thermal Characteristic

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient (°C)	$R_{\theta JA}$	55	62.5	°C/W

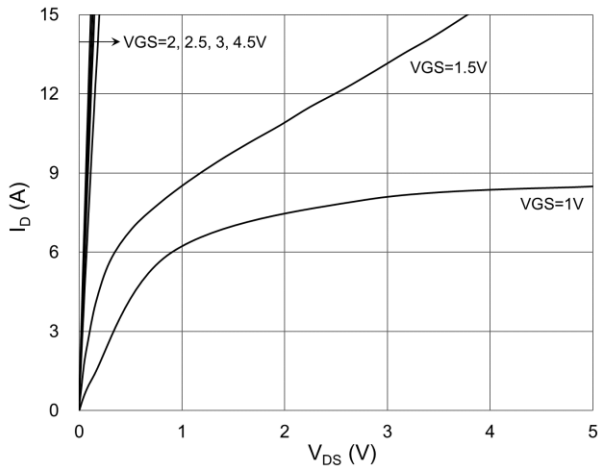
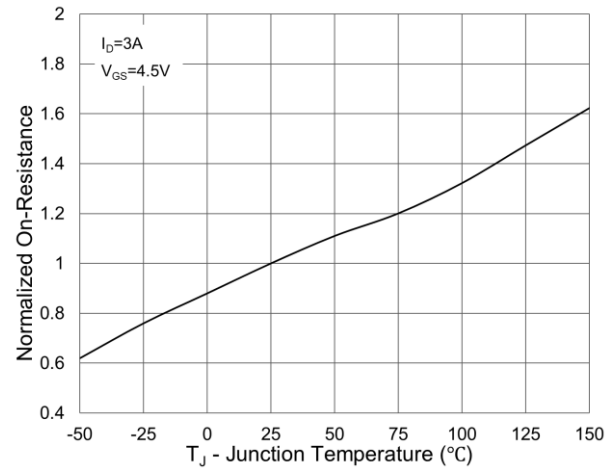
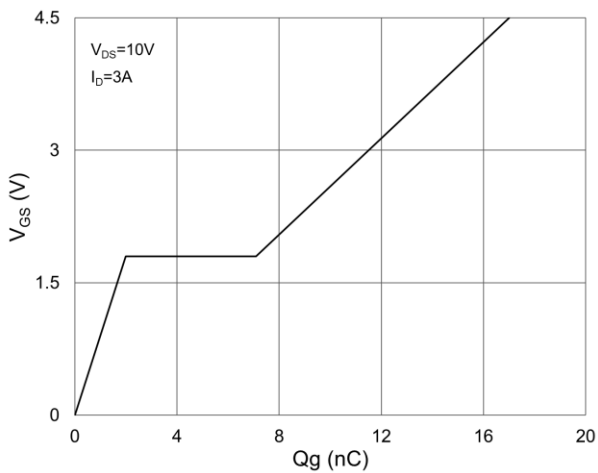
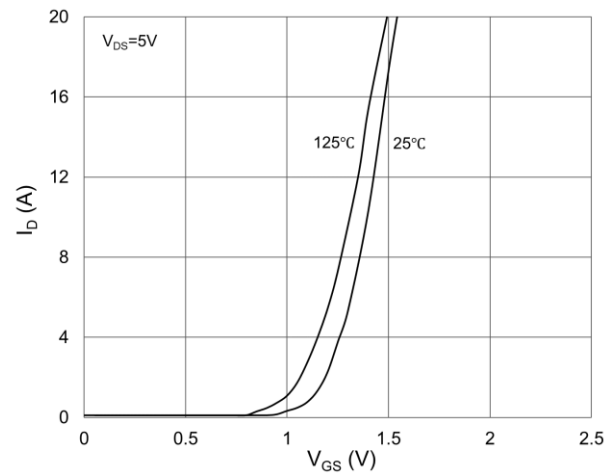
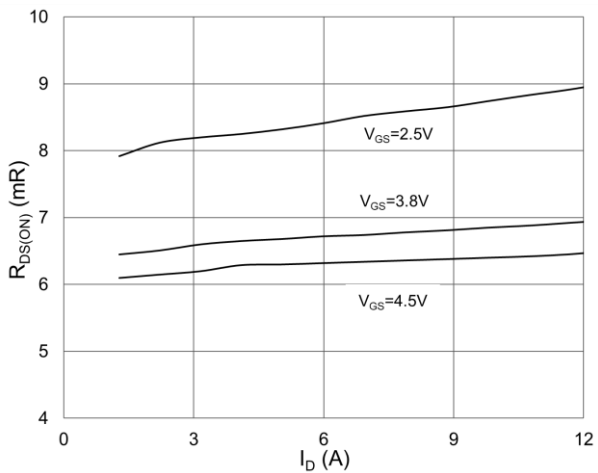
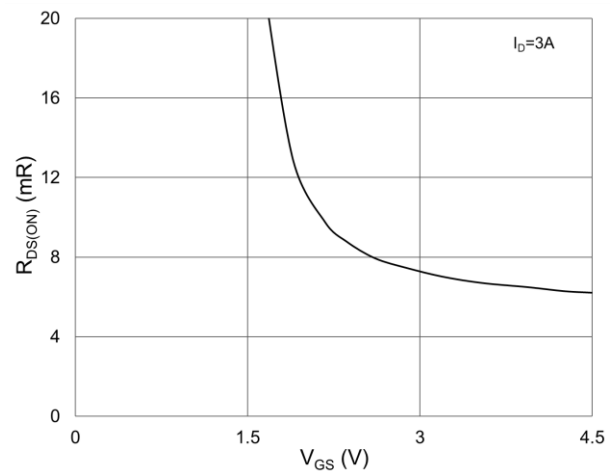
Electrical Characteristics (T_J=25°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Static^a						
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0 V, I _D = 250 μA	20			V
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	0.4	0.7	1.0	V
Gate-Source Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 10 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 20 V, V _{GS} = 0 V			1	μA
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 4.5V, I _D = 1 A		6.3	7.2	mΩ
		V _{GS} = 2.5V, I _D = 1 A		8.3	10.5	
Forward Transconductance ^a	g _{fs}	V _{DS} = 5 V, I _D = 3 A		26		S
Body Diode Voltage	V _{SD}	I _S = 1 A, V _{GS} = 0 V		0.8	1.2	V
Dynamic^b						
Input Capacitance	C _{iss}	V _{DS} = 10 V, V _{GS} = 0V, f = 1 MHz		1080		pF
Output Capacitance	C _{oss}			238		
Reverse Transfer Capacitance	C _{rss}			165		
Total Gate Charge	Q _g	V _{DS} = 10 V, V _{GS} = 4.5 V, I _D = 3 A		16		nC
Gate-Source Charge	Q _{gs}			2.0		
Gate-Drain Charge	Q _{gd}			5.1		
Turn-On Delay Time	t _{d(on)}	V _{DD} = 10 V, I _D = 3A V _{gs} = 4.5 V, R _{gen} = 3 Ω		2.1		ns
Rise Time	t _r			5.8		
Turn-Off Delay Time	t _{d(off)}			42		
Fall Time	t _f			89		

Notes

- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %.
- b. Guaranteed by design, not subject to production testing.
- c. Surface Mounted on FR4 Board, t ≤ 10 sec.
- d. Repetitive Rating: Pulse width limited by maximum junction temperature.

Typical Performance Characteristics

Fig1 Output Characteristics

Fig2 Normalized $R_{DS(on)}$ vs. T_J

Fig3 Gate Charge Waveform

Fig4 Transfer Characteristics

Fig5 $R_{DS(on)}$ vs. Drain Current and Gate Voltage

Fig6 $R_{DS(on)}$ vs. Gate Voltage


Typical Performance Characteristics

Fig7 Capacitance Characteristics

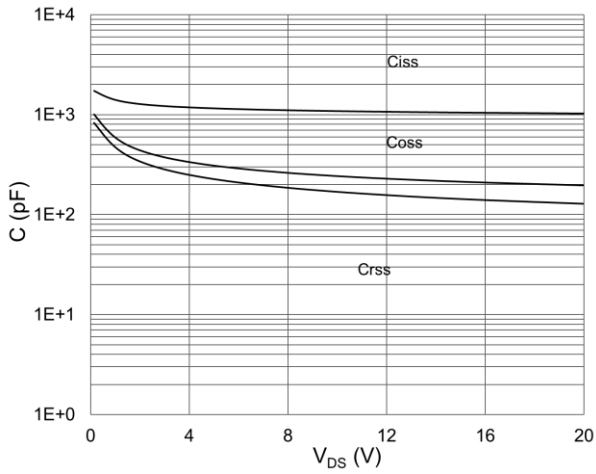


Fig8 Drain Current Derating

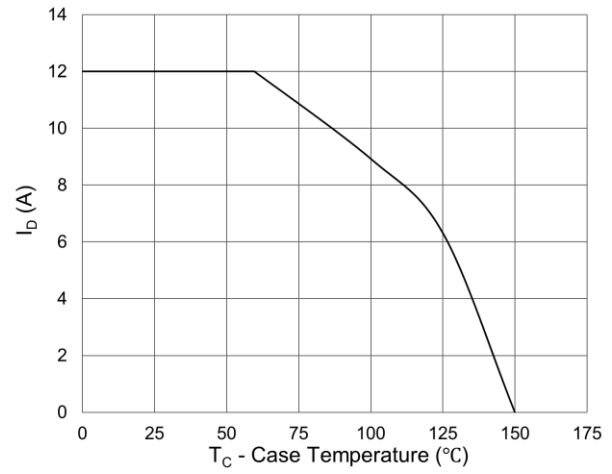


Fig9 Power Dissipation

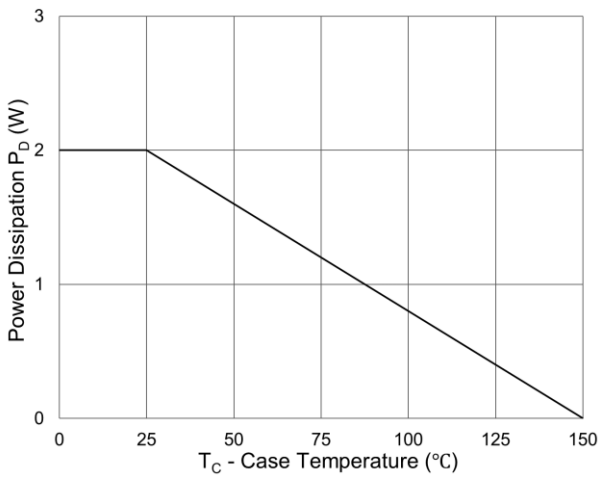


Fig10 Source-Drain Diode Forward Characteristics

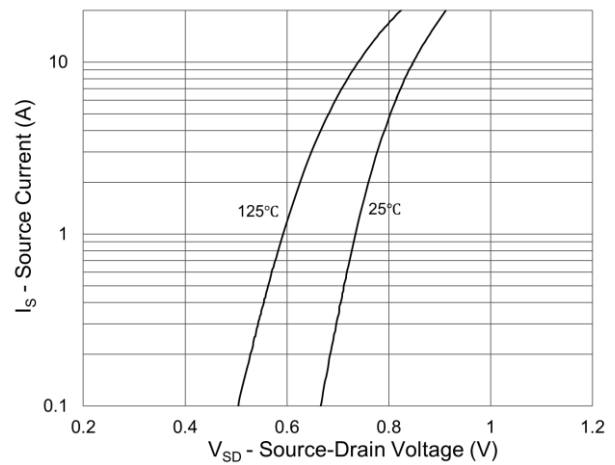


Fig11 Normalized Threshold Voltage vs. T_J

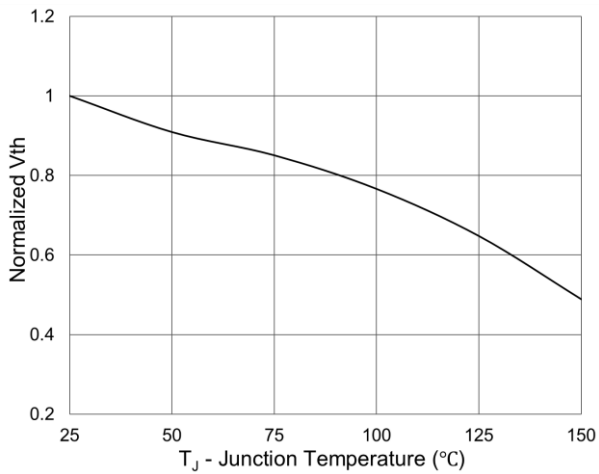
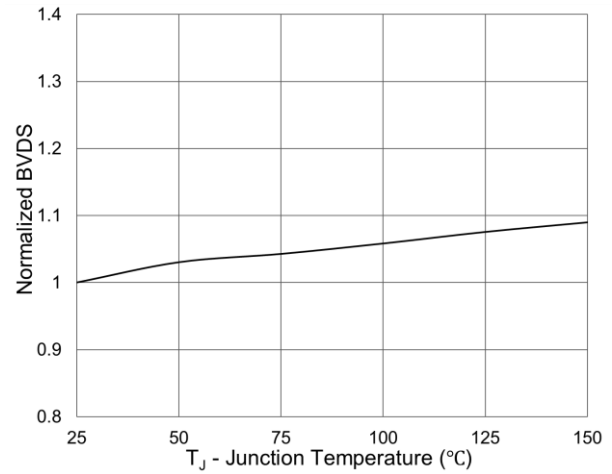


Fig12 Normalized Breakdown Voltage vs. T_J



Typical Performance Characteristics

Fig13 Maximum Safe Operation Area

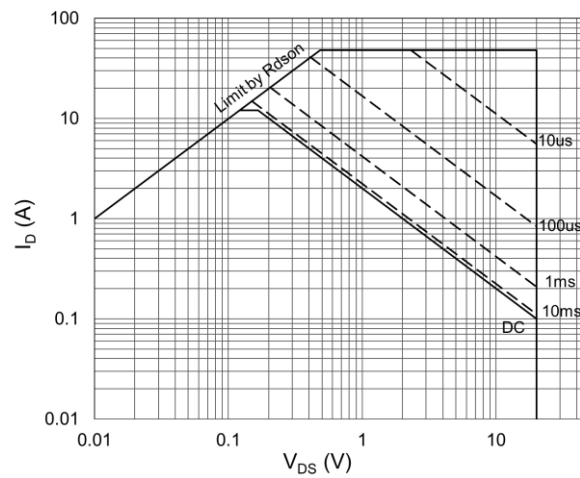
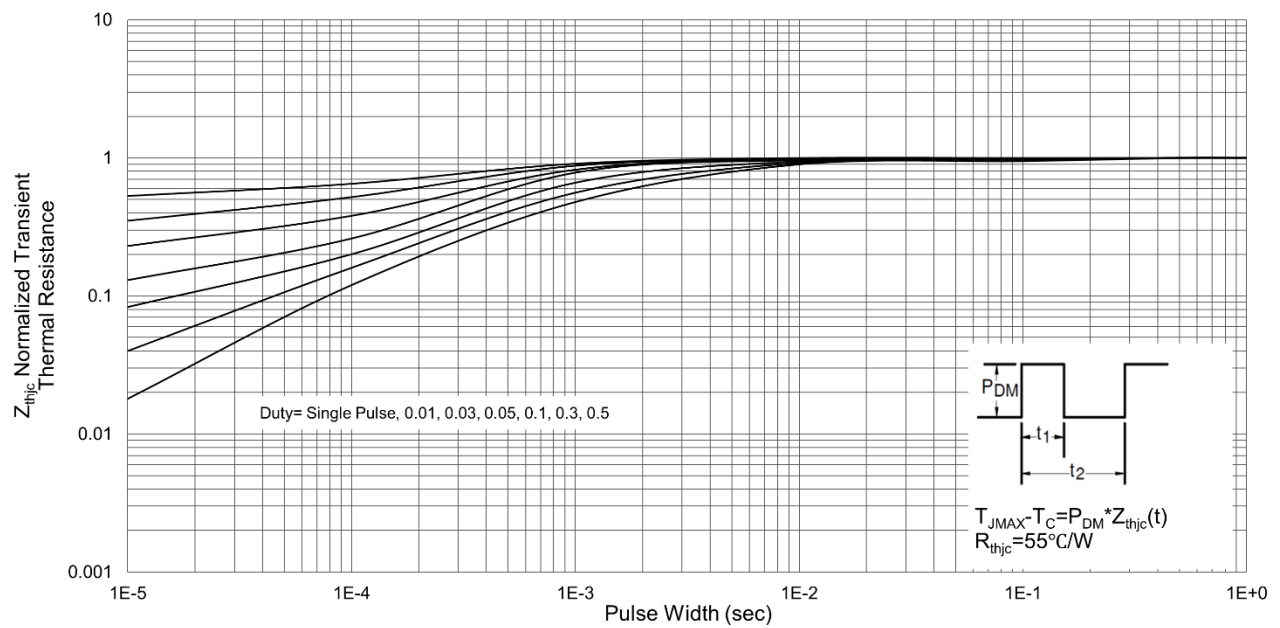
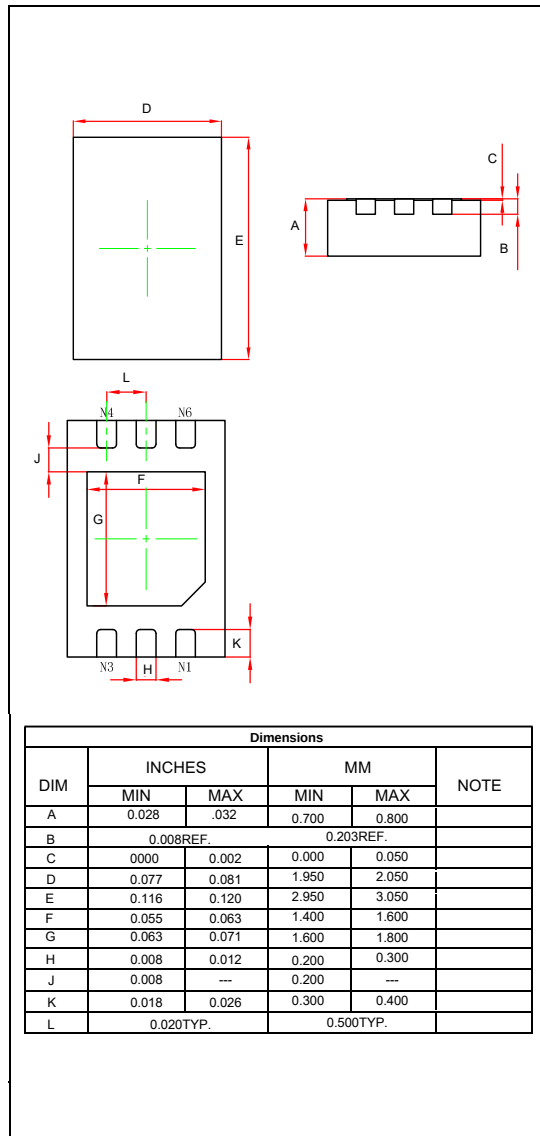


Fig14 Normalized Transient Impedance



Outline Drawing DFN2030-6L



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