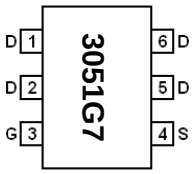
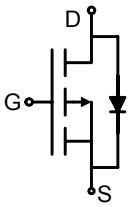
Main Product Characteristics:

V_{DSS}	-30V
R_{DS}(on)	45mohm(typ.)
I_D	-4A

SOT23-6



Marking and pin Assignment



Schematic diagram

Features and Benefits:

- Advanced trench MOSFET process technology
- Special designed for buttery protection, load switching and general power management
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150℃ 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 buttery protection, power switching application and a wide variety of other applications

Absolute max Rating:

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±25	V
Drain Current-Continuous@ Current-Pulsed (Note 1)	I_D	-4	A
	I_{DM}	-25	A
Maximum Power Dissipation	P_D	1.7	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃

Thermal Resistance

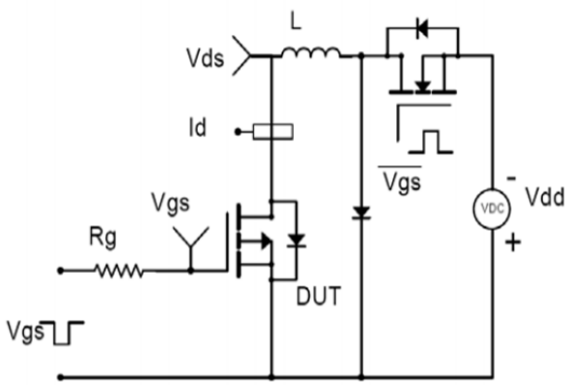
Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	75	℃/W
Thermal Resistance, Junction-to-Case(Note 2)	$R_{\theta JC}$	30	℃/W

Electrical Characterizes @T_A=25℃ unless otherwise specified

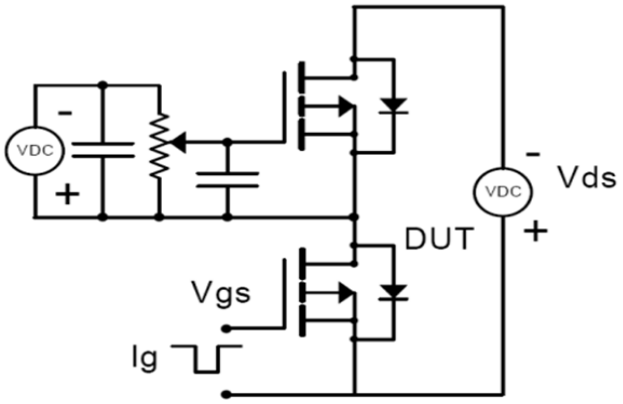
Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=-250μA	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24V,V_{GS}=0V			-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±25V,V_{DS}=0V			±100	nA
ON CHARACTERISTICS (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-1	-1.6	-3	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-4A		45	51	mΩ
		V_{GS}=-4.5V, I_D=-3.4A		65	85	mΩ
Forward Transconductance	g_{FS}	V_{DS}=-5V,I_D=-4A		8.5		S
DYNAMIC CHARACTERISTICS (Note4)						
Input Capacitance	C_{lss}	V_{DS}=-15V,V_{GS}=0V, F=1.0MHz		520		PF
Output Capacitance	C_{oss}			94		PF
Reverse Transfer Capacitance	C_{rss}			73		PF
SWITCHING CHARACTERISTICS (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-15V,I_D=-1A V_{GS}=-10V,R_{GEN}=6Ω		8.9		nS
Turn-on Rise Time	t_r			4.0		nS
Turn-Off Delay Time	$t_{d(off)}$			22.6		nS
Turn-Off Fall Time	t_f			5.5		nS
Total Gate Charge	Q_g	V_{DS}=-5V,I_D=-4A, V_{GS}=-5V		7.1		nC
Gate-Source Charge	Q_{gs}			0.86		nC
Gate-Drain Charge	Q_{gd}			3.9		nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=-1.3A		-0.8	-1.2	V
Diode Forward Current (Note 2)	I_S				-4	A
Reverse Recovery Time	t_{rr}	Tj=25℃,IF=-4A, di/dt=-100A/uS		10.3		nS
Reverse Recovery Charge	Q_{rr}			4.3		nC

Test Circuits and Waveforms

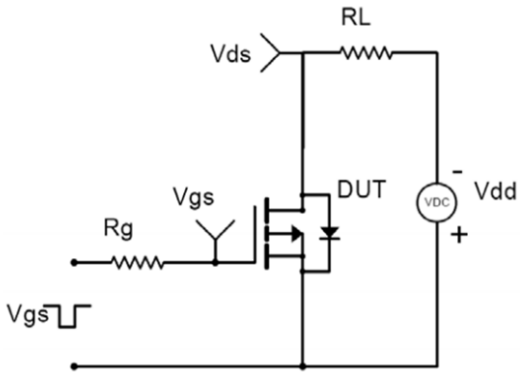
EAS Test Circuit:



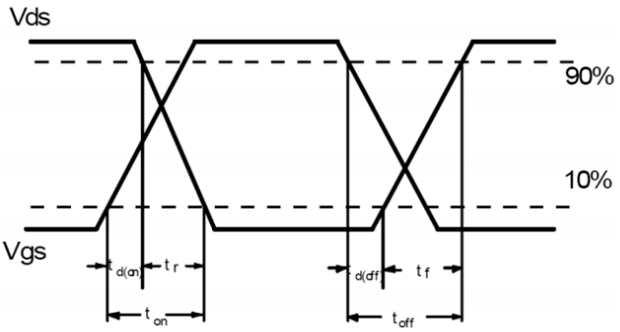
Gate Charge Test Circuit:



Switching Time Test Circuit:



Switching Waveforms:



NOTES:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

Typical Electrical and Thermal Characteristics

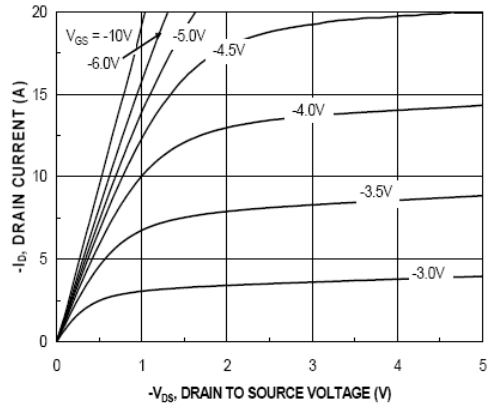


Figure 1. Typical Output Characteristics

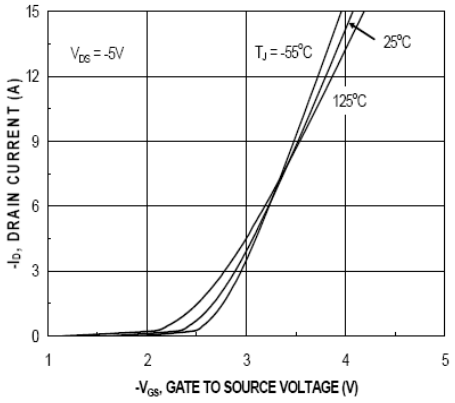


Figure 2. Transfer Characteristics

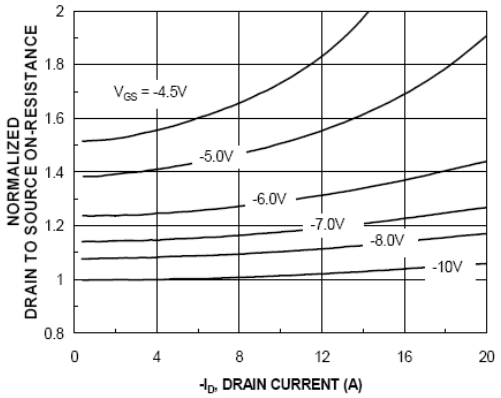


Figure 3. Drain-Source On-Resistance

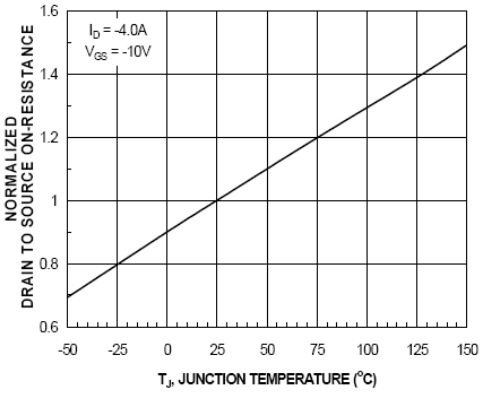


Figure 4 . Drain-Source On-Resistance

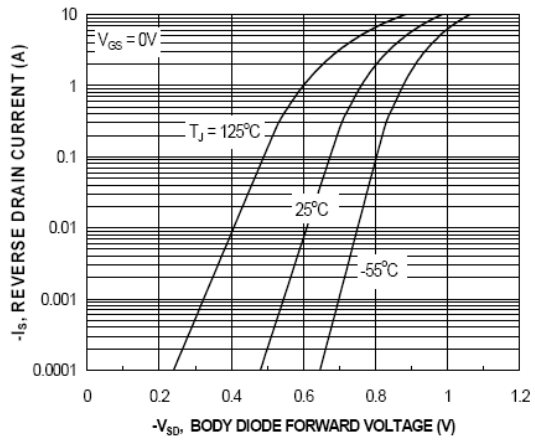


Figure 5 . Source- Drain Diode Forward

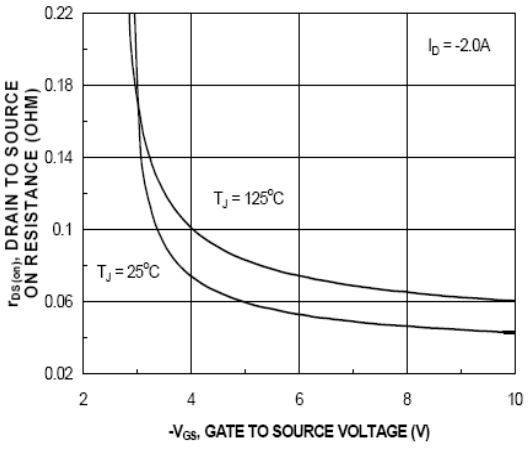


Figure 6. Rdson vs Vgs

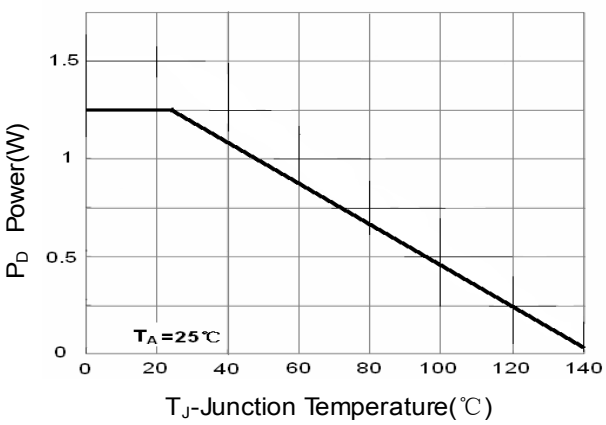


Figure 7. Power Dissipation

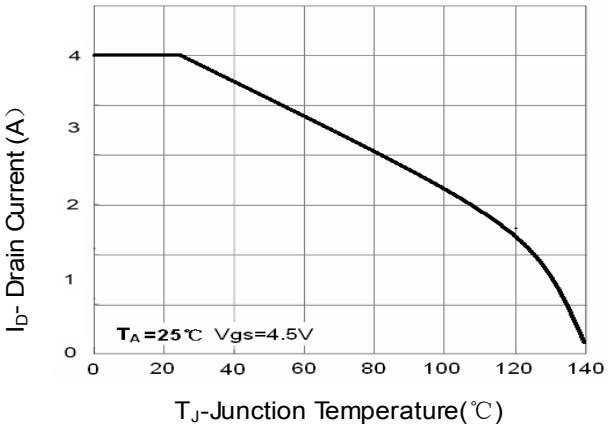


Figure 8. Drain Current

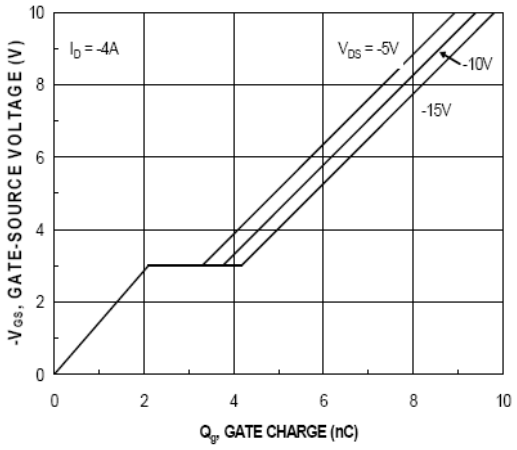


Figure 9. Gate Charge

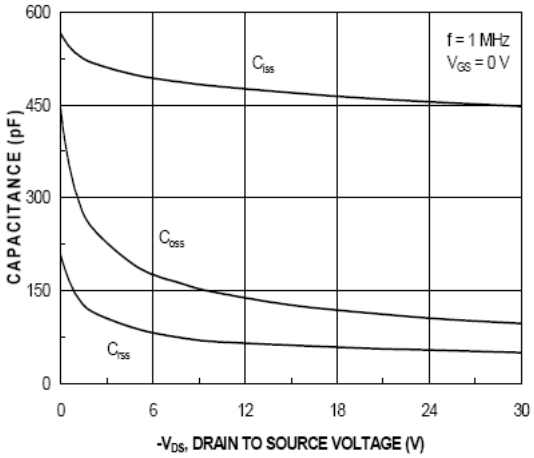


Figure 10. Capacitance vs Vds

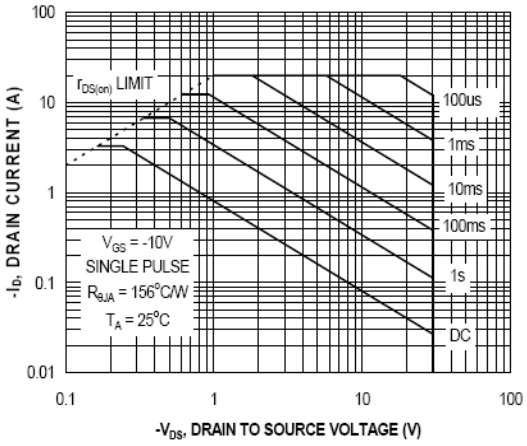


Figure 11. Safe Operation Area

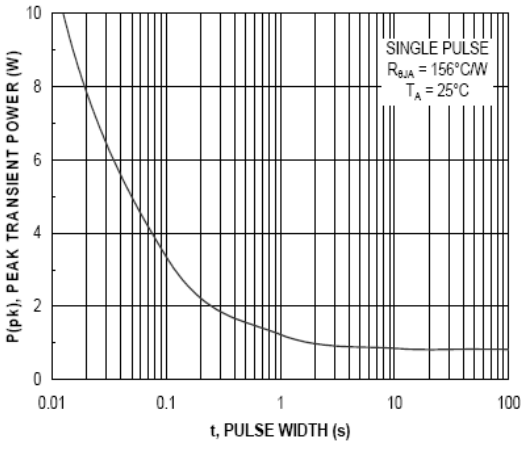


Figure 12. Single Pulse Maximum Power Dissipation

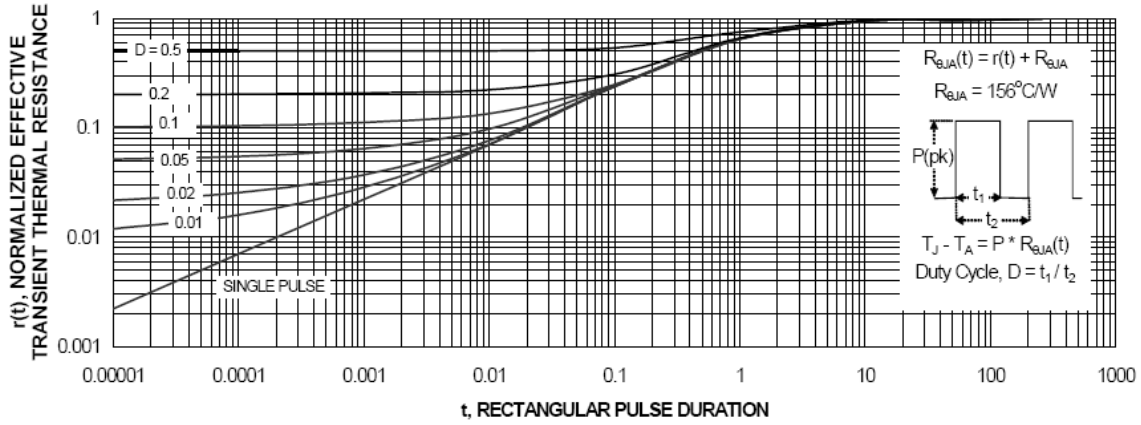
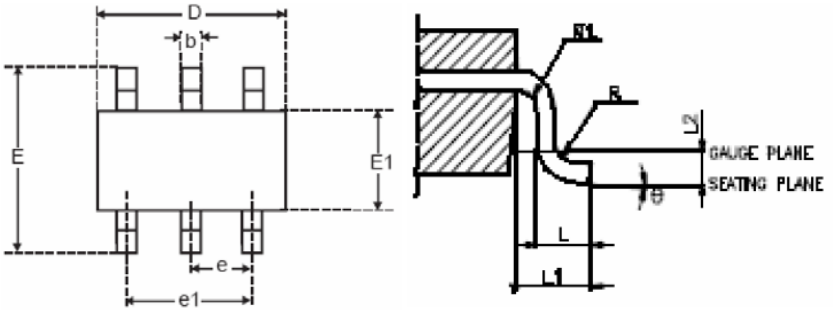
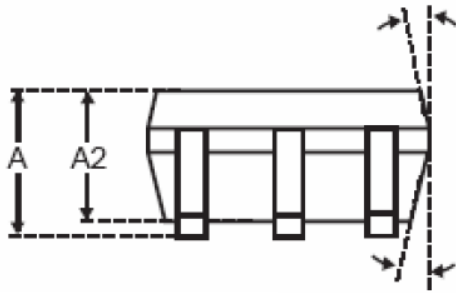


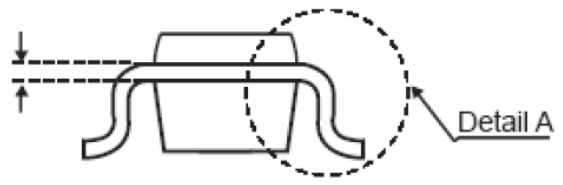
Figure 13. Normalized Maximum Transient Thermal Impedance

Mechanical Data：

SOT23-6 Dimensions in Millimeters (UNIT:mm)







SYMBOLS	MILLMETERS		
	MIN.	NOM.	MAX.
A			1.45
A1			0.15
A2	0.90	1.15	1.30
b	0.30		0.50
c	0.08		0.22
D	2.90 BSC.		
E	2.80 BSC.		
E1	1.60 BSC.		
e	0.95 BSC.		
e1	1.90 BSC.		
L	0.30	0.45	0.60
L1	0.60 REF		
L2	0.25 BSC.		
R	0.10		
R1	0.10		0.25
θ	0°	4°	8°
θ1	5°	10°	15°

NOTES：

1. All dimensions are in millimeters.
2. Dimensions are inclusive of plating
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 6 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

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