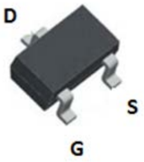
60V N-Channel Enhancement Mode Power MOSFET

DESCRIPTION：
- High dense cell design
- $R_{DS(ON),typ.}$= 75mΩ@V_{GS}=10V
- $R_{DS(ON),typ.}$= 85mΩ@V_{GS}=4.5V
- RoHS compliant

V_{DS}	60V
I_D	3A
$R_{DS(ON)\_Typ.}$@V_{GS}=10V	75mΩ

TYPICAL APPLICATIONS：
- DC/DC Converter
- Power Management
- Load Switch



SOT-23

MAXIMUM RATINGS (at T_A = 25 °C, unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	±12	V
Continuous Drain Current	T_A=25℃ T_A=70℃	I_D	3.0 2.4	A
Pulsed Drain Current		I_{DM}	12	A
Power dissipation		P_D	1.25	W
Operating & Storage temperature Range		T_J, T_{STG}	-55~+150	℃

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction-to-Ambient	$R_{\theta JA}$	100	℃/W

ELECTRICAL CHARATERISTICS (at T_A = 25 °C, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage VGS = 0V, ID = 250uA	$V_{(BR)DSS}$	60			V
Zero Gate Voltage Drain Current VDS = 48 V, VGS = 0 V	I_{DSS}			1	uA
Gate-Source Leakage Current VGS = ±20V, VDS = 0V	I_{GSS}			±100	nA
Gate-Source threshold voltage VDS = VGS, ID = 250uA	$V_{GS(th)}$	1.0		2.5	V
Drain-Source On-State Resistance VGS = 10V, ID = 3A VGS = 4.5V, ID = 5A	$R_{DS(on)}$		75 85	98 111	mΩ
Input capacitance f=1MHz, VDS=25 V, VGS=0 V	C_{iss}		560		pF
Output capacitance f=1MHz, VDS=25 V, VGS=0 V	C_{oss}		70		pF
Reverse transfer capacitance f=1MHz, VDS=25 V, VGS=0 V	C_{rss}		70		pF
Total Gate Charge VDD= 30V, ID= 3A,VGS= 10V	Q_G		13		nC
Gate to Source Charge VDD= 30V, ID= 3A,VGS= 10V	Q_{GS}		1		nC
Gate to Drain Charge VDD= 30V, ID= 3A,VGS= 10V	Q_{GD}		4		nC
Turn-on delay time VDD=30 V, VGS= 10V, ID= 1A, R_{GEN}= 6Ω	$td_{(ON)}$		11		ns
Turn-on Rise time VDD=30 V, VGS= 10V, ID= 1A, R_{GEN}= 6Ω	tr		5		ns
Turn-off delay time VDD=30 V, VGS= 10V, ID= 1A, R_{GEN}= 6Ω	$td_{(OFF)}$		26		ns
Turn-off Fall time VDD=30 V, VGS= 10V, ID= 1A, R_{GEN}= 6Ω	tf		4		ns

Body Diode

Drain to Source Diode Forward Current	I_S			1.7	A
Drain to Source Diode Forward Voltage VGS = 0V, I_{SD} = 1A	V_{SD}			1.2	V

Typical Characteristics

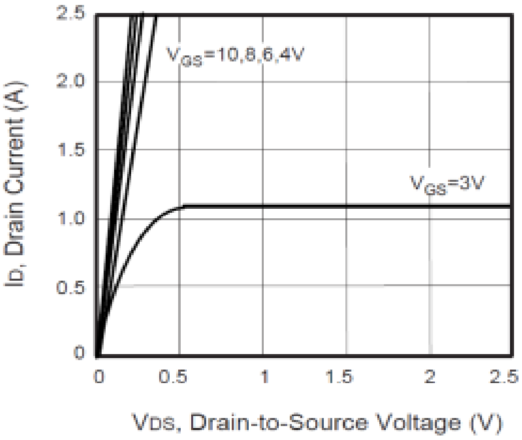


Figure 1. Output Characteristics

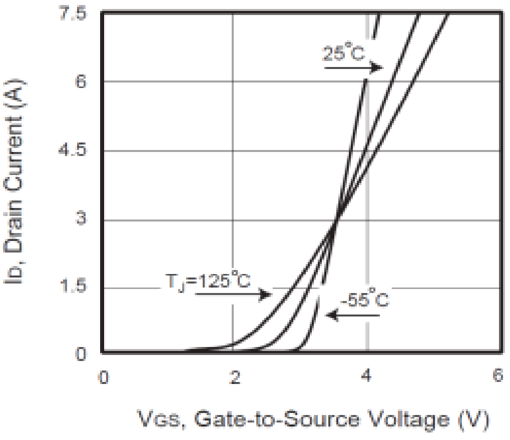


Figure 2. Transfer Characteristics

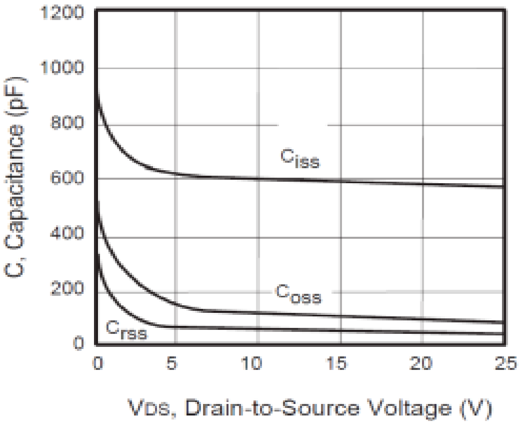


Figure 3. Capacitance

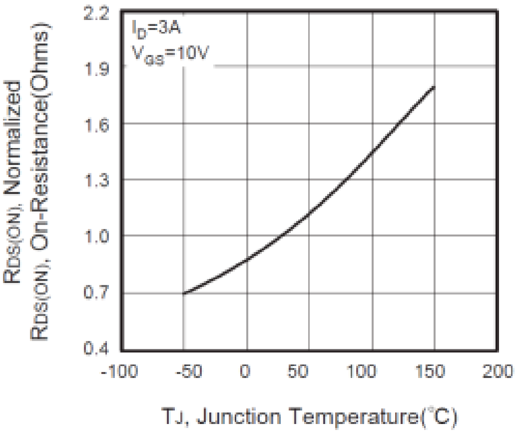


Figure 4. On-Resistance Variation with Temperature

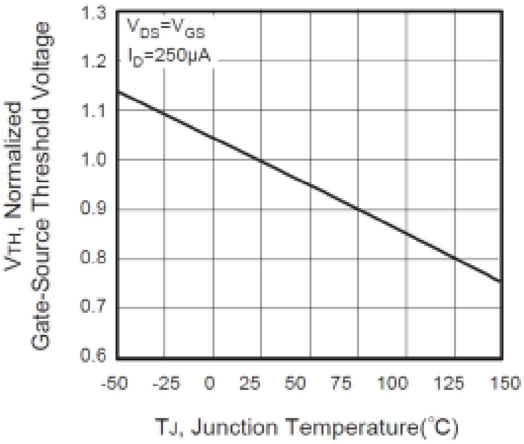


Figure 5. Gate Threshold Variation with Temperature

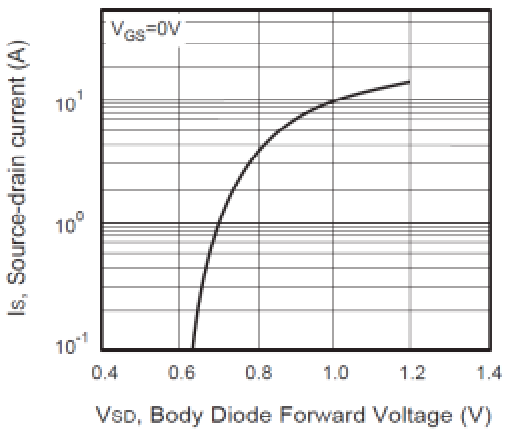


Figure 6. . Body Diode Forward Voltage Variation with Source Curren

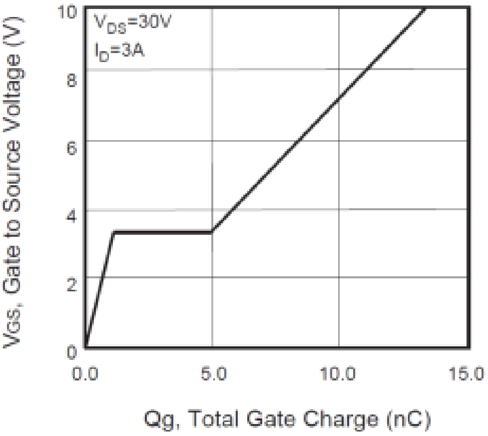


Figure 7. Gate Charge Characteristics

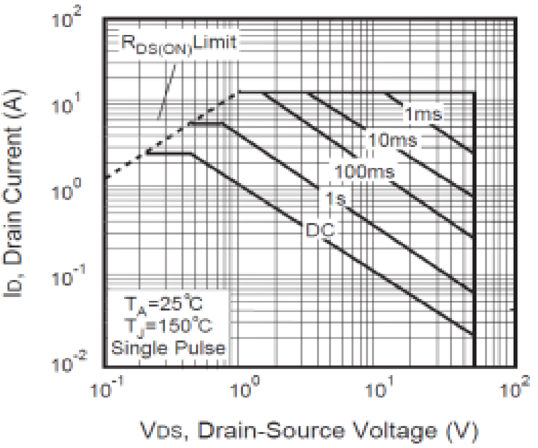


Figure 8. Maximum Safe Operating Area

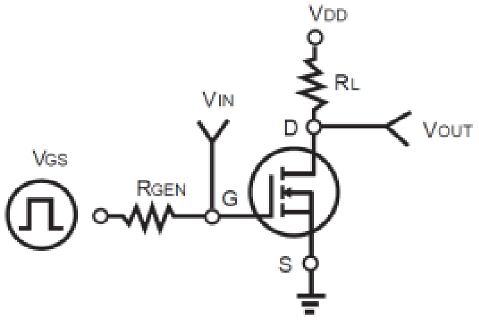


Figure 9. Switching Test Circuit

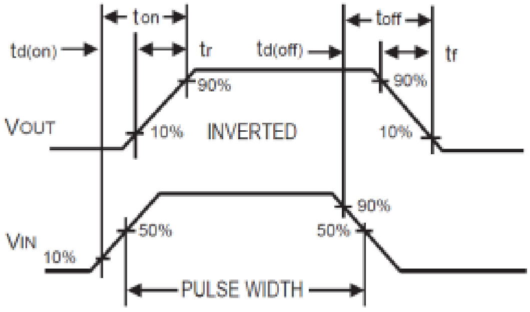


Figure 10. Switching Waveform

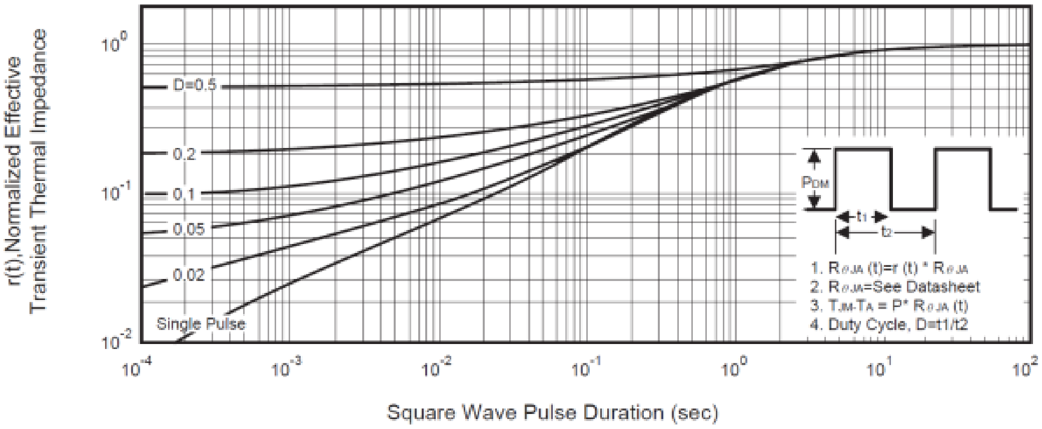
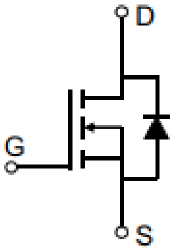
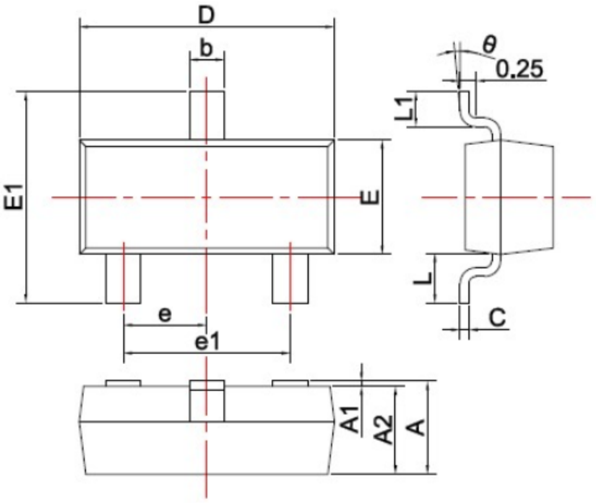


Figure 11. Normalized Thermal Transient Impedance Curve

・Circuit diagram



・SOT-23 Package outlines : Dimensions in (mm)



Dimensions	Millimeters	
	Min	Max
A	0.90	1.15
A1	0.00	0.10
A2	0.90	1.05
b	0.30	0.50
c	0.08	0.15
D	2.80	3.00
E	1.20	1.40
E1	2.10	2.64
e	0.95 Typ.	
e1	1.80	2.00
L	0.64 Ref.	
L1	0.30	0.60
θ	0^o	8^o

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