

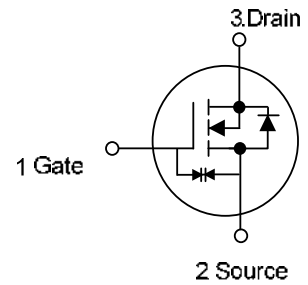
■ PRODUCT CHARACTERISTICS

VDSS	60V
$R_{DS(on)max}(V_{GS}=4.5\text{ V})$	2.4Ω
$R_{DS(on)max}(V_{GS}=10\text{ V})$	2.2Ω
ID	0.38A

■ FEATURES

- * High Density Cell Design for Low $R_{DS(on)}$.
- * Voltage Controlled Small Signal Switch
- * Rugged and Reliable
- * High Saturation Current Capability
- * ESD protected:2000V

SYMBOL



■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$, unless otherwise specified.)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V _{DSS}	60	V
Drain-Gate Voltage (R _{GS} ≤1MΩ)		V _{DGR}	60	V
Gate Source Voltage	Continuous	V _{GSS}	±20	V
	Non Repetitive(t _p <50μs)		±40	
Drain Current	Continuous	I _D	380	mA
	Pulsed		950	
Power Dissipation		P _D	200	mW
Derated Above 25°C			1.6	mW/°C
Junction Temperature		T _J	+ 150	°C
Storage Temperature		T _{STG}	-55 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	625	$^\circ\text{C/W}$
Junction to Case	θ_{JC}	215	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS (T = 25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =10μA	60			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
Gate-Source Leakage Current	I _{GSSF}	V _{GS} =20V, V _{DS} =0V			10	μA
	I _{GSSR}	V _{GS} =-20V, V _{DS} =0V			-10	μA
ON CHARACTERISTICS (Note)						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250μA	1.3		2.45	V
Static Drain-Source On-Resistance	R _{DS (ON)}	V _{GS} =10V, I _D =300mA			2.2	Ω
		V _{GS} =4.5V, I _D =200mA			2.4	Ω
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{ISS}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz			50	pF
Output Capacitance	C _{OSS}				25	pF
Reverse Transfer Capacitance	C _{RSS}				5	pF
Turn-On Time	t _{ON}	V _{DD} =30V, R _L =150Ω, I _D =200mA,			20	nS
Turn-Off Time	t _{OFF}	V _{GS} =10V, R _G =25Ω			20	nS
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Maximum Continuous Drain-Source Diode Forward Current	I _S				300	mA
Maximum Pulsed Drain-Source Diode Forward Current	I _{SM}				0.95	A
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =300mA (Note)		0.88	1.5	V

Note: Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%

■ TEST CIRCUIT AND WAVEFORM

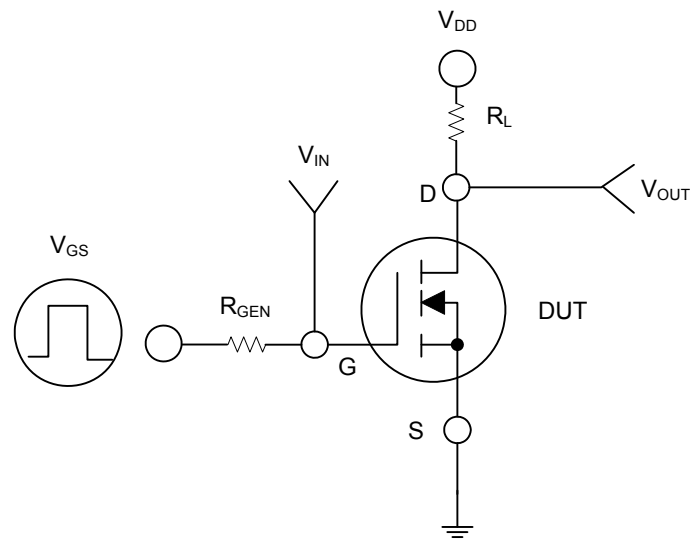


Fig. 1

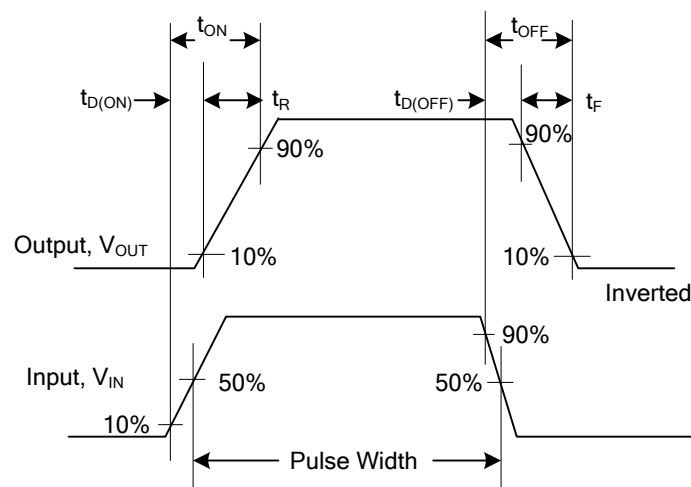
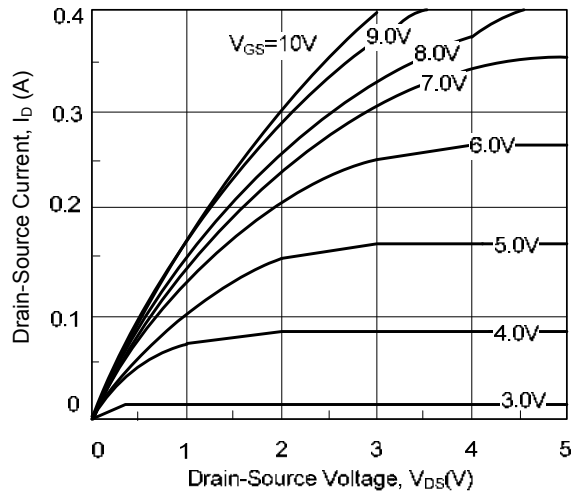


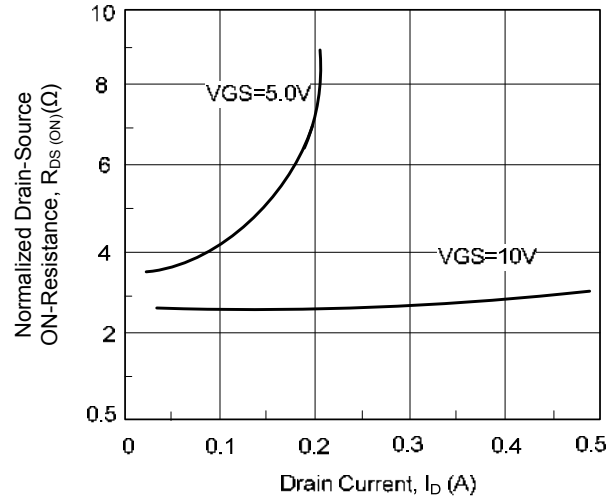
Fig. 2 Switching Waveforms

■ TYPICAL CHARACTERISTICS

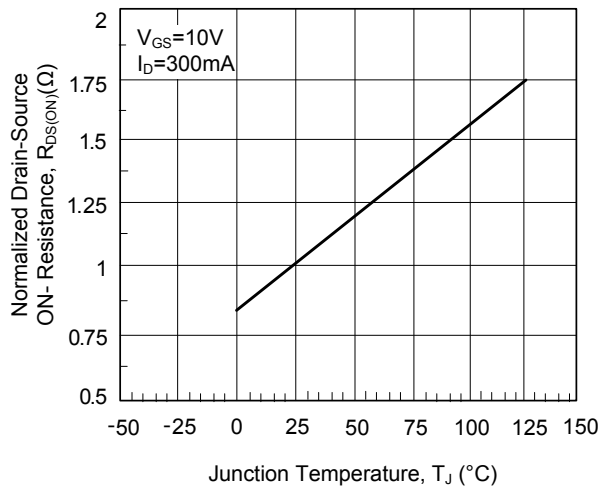
On-Resistance Characteristics



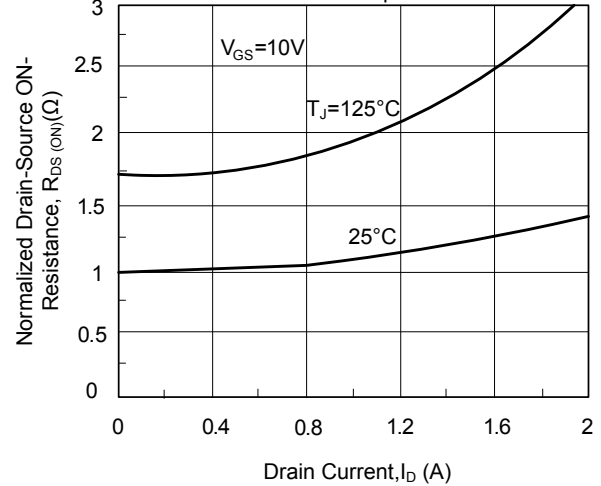
On-Resistance Variation with Gate Voltage and Drain Current



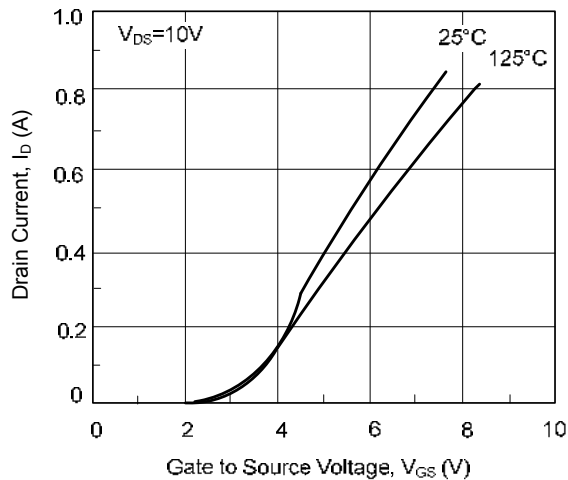
On-Resistance Variation with Temperature



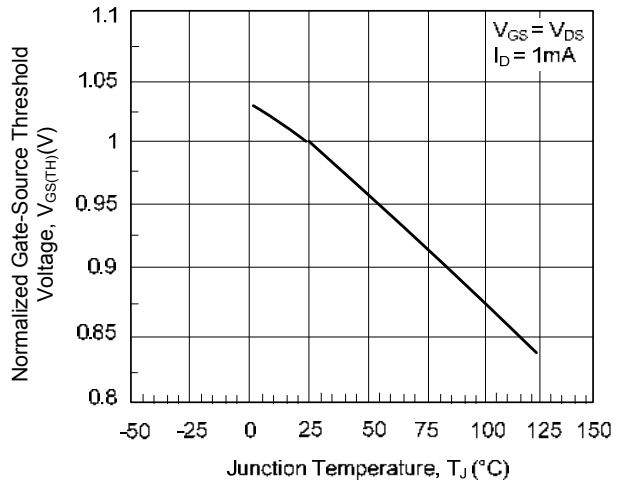
On-Resistance Variation with Drain Current and Temperature



Transfer Characteristics

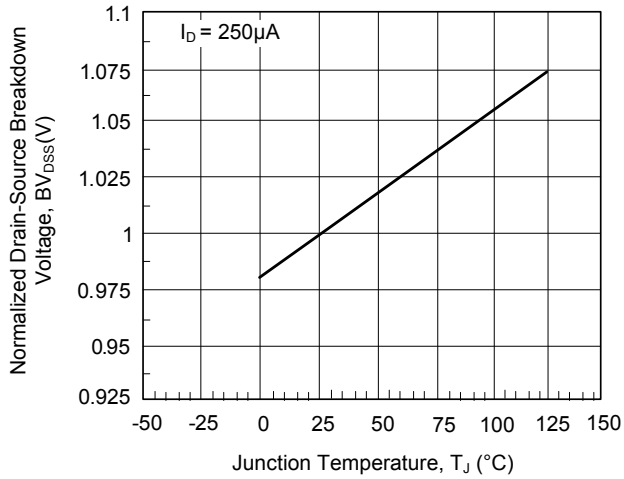


Gate Threshold Variation with Temperature

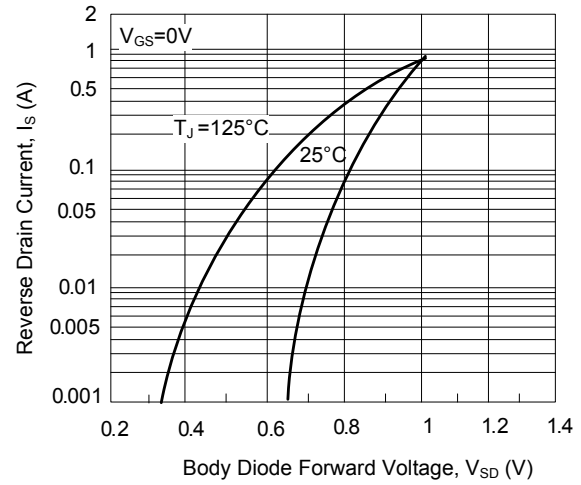


■ TYPICAL CHARACTERISTICS(Cont.)

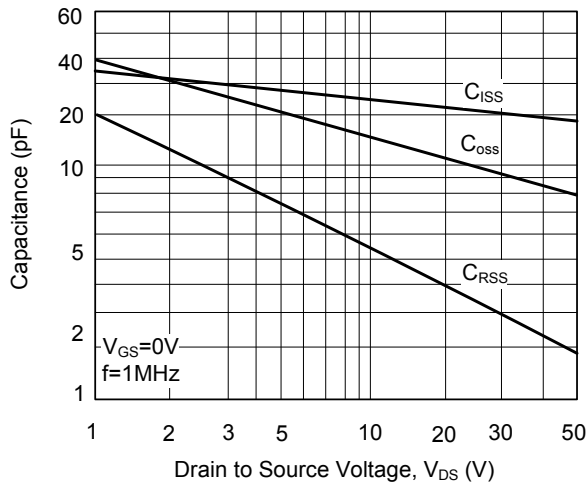
Breakdown Voltage Variation with Temperature



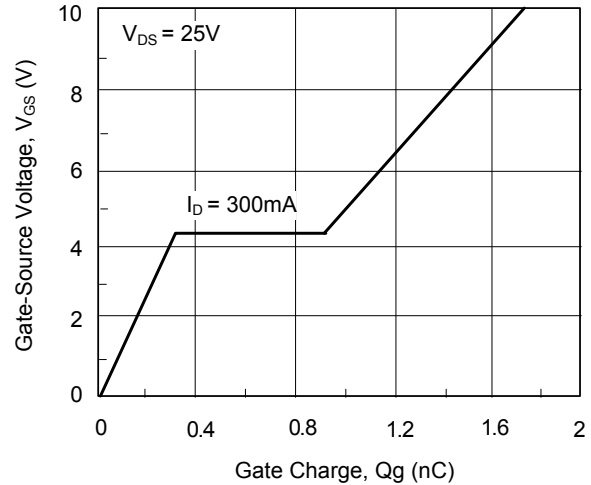
Body Diode Forward Voltage Variation with Temperature



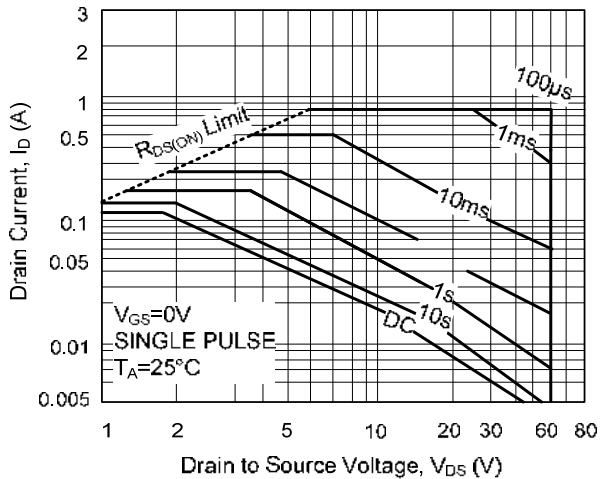
Capacitance Characteristics



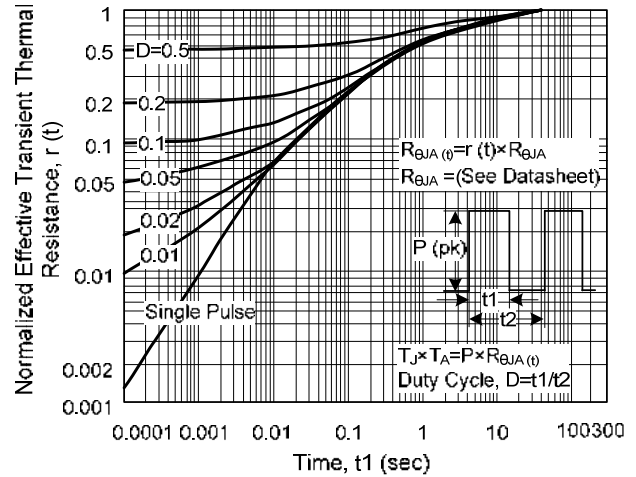
Gate Charge Characteristics



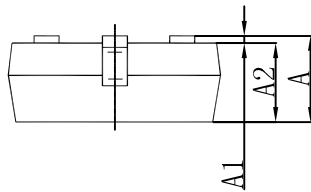
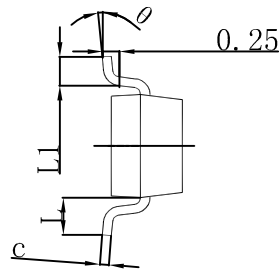
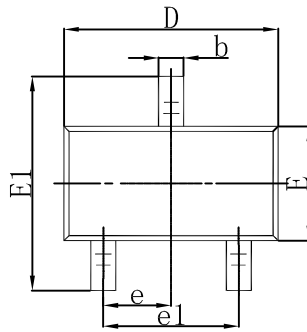
Maximum Safe Operating Area



Transient Thermal Response Curve

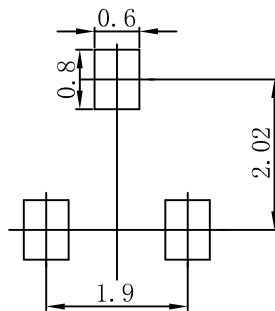


SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

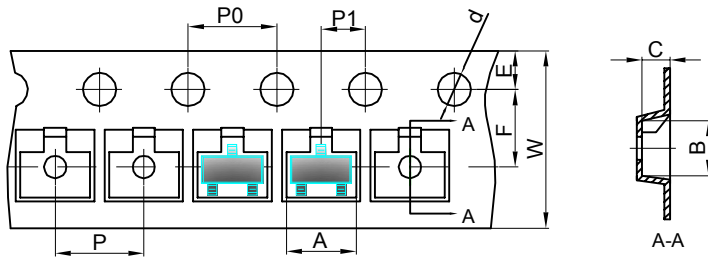
SOT-23 SUGGESTED PAD LAYOUT



Note:

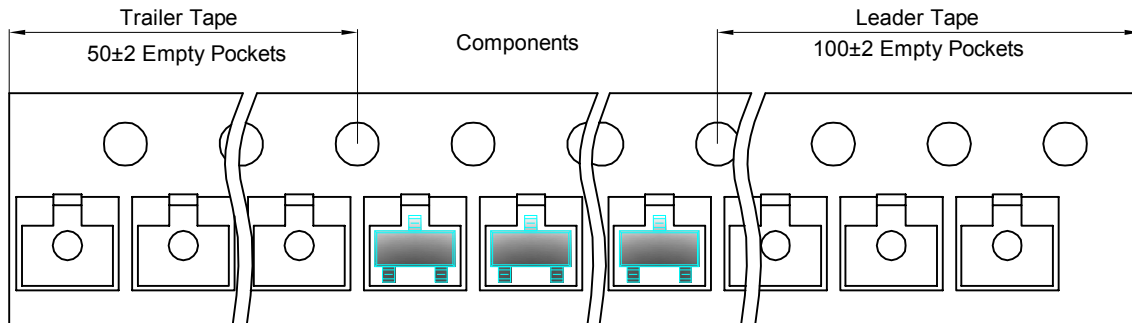
1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

SOT-23 EMBOSSED CARRIER TAPE

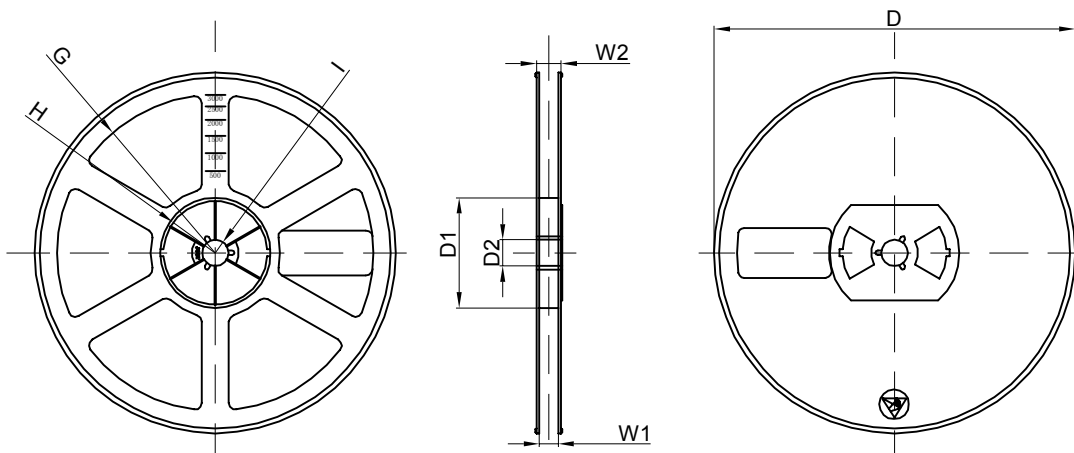


Dimensions are in millimeter											
Pkg type	A	B	C	d	E	F	P0	P	P1	W	
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00	

SOT-23 TAPE LEADER AND TRAILER



SOT-23 REEL



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	192×192×193	180,000 pcs	404×404×214	