

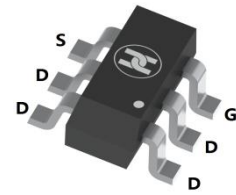
HIGH VOLTAGE MOSFET (P-CHANNEL)

FEATURES

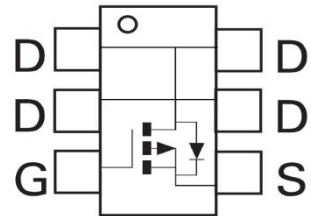
- $V_{DS}=-100V, R_{DS(ON)} \leq 0.35\Omega @ V_{GS}=-10V, I_D=-1.6A$
- Low on-resistance and Fast switching speed
- Low gate drive and Low threshold
- For DC - DC Converters and Power Management functions
- For Uninterrupted Power Supply and Motor control applications
- Surface Mount device

MECHANICAL DATA

- Case: SOT-23-6
- Case Material: Molded Plastic. UL flammability
- Classification Rating: 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Weight: 0.018 grams (approximate)



SOT-23-6



MAXIMUM RATINGS ($T_A = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-source voltage	V_{DS}	-100	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain current	I_D	($V_{GS}=10V; T_{amb}=25^\circ C$)(b)	-1.6
		($V_{GS}=10V; T_{amb}=70^\circ C$)(b)	-1.3
		($V_{GS}=10V; T_{amb}=25^\circ C$)(a)	-1.3
Pulsed drain current (c)	I_{DM}	-7.7	A
Continuous Source Current (Body Diode)	I_S	-2.1	A
Pulsed Source Current (Body Diode)(c)	I_{SM}	-7.7	A
Power dissipation(a)	P_D	1.1	W
Power dissipation(b)		1.7	w
Junction to Ambient(a)	$R_{\theta JA}$	113	$^\circ C/W$
Junction to Ambient (b)		73	$^\circ C/W$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	$^\circ C$

NOTES (a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions
 (b) For a device surface mounted on 25mm x 25mm FR4 PCB measured at $t \leq 5$ secs.

(c) Repetitive rating 25mm x 25mm FR4 PCB, $D = 0.05$, pulse width 10 μs - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph..

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ C$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Drain-Source breakdown voltage	$V_{(BR)DSS}$	-100			V	$V_{GS}=0V, I_D=-250\mu A$
Zero gate voltage drain current	I_{DSS}			-1.0	μA	$V_{DS}=-100V, V_{GS}=0V$
Gate-body leakage current	I_{GSS}			± 100	nA	$V_{DS}=0V, V_{GS}=\pm 20V$
Gate-threshold voltage	$V_{GS(th)}$	-2.0		-4.0	V	$V_{DS}=V_{GS}, I_D=-250\mu A$
Drain-source on-resistance (1)	$R_{DS(ON)}$			0.35	Ω	$V_{GS}=-10V, I_D=-1.4A$
				0.45	Ω	$V_{GS}=-6V, I_D=-1.2A$
Forward Trans-conductance (1) (2)	g_{fs}		2.8		S	$V_{DS}=-15V, I_D=-1.4A$
Input capacitance(2)	C_{iss}		424		pF	$V_{DS}=-50V, V_{GS}=0V, f=1MHz$
Output capacitance(2)	C_{oss}		36.6		pF	
Reverse transfer capacitance(2)	C_{rss}		29.8		pF	
Turn-on delay time(2)(3)	$t_{d(on)}$		3.0		nS	$V_{DD}=-50V, I_D=-1A$ $R_G=6\Omega, V_{GS}=-10V$
Turn-on rise time(2)(3)	t_r		3.5		nS	
Turn-off delay time(2)(3)	$t_{d(off)}$		13.4		nS	
Turn-off fall time(2)(3)	t_f		7.2		nS	
Total Gate Charge(2)(3)	Q_g		7.1		nC	$V_{DS}=-50V, V_{GS}=-6V, I_D=-1.4A$
			10.7			
Gate-Source Charge(2)(3)	Q_{gs}		1.7		nC	$V_{DS}=-50V, V_{GS}=-10V, I_D=-1.4A$
Gate Drain Charge(2)(3)	Q_{gd}		3.8		nC	
Diode Forward Voltage (1)	V_{SD}		-0.85	-0.95	V	$I_S=-1.7A, V_{GS}=0V, T_J=25^\circ C$
Reverse Recovery Time (3)	t_{rr}		33		nS	$I_F=-1.5A, di/dt=100A/\mu s$
Reverse Recovery Charge (3)	Q_{rr}		48		nC	

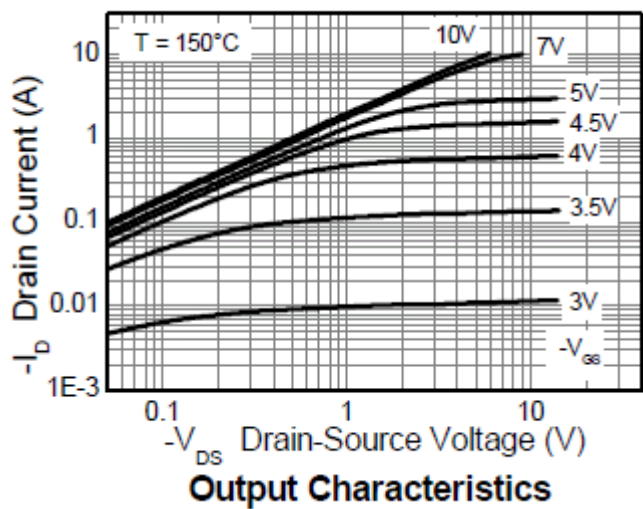
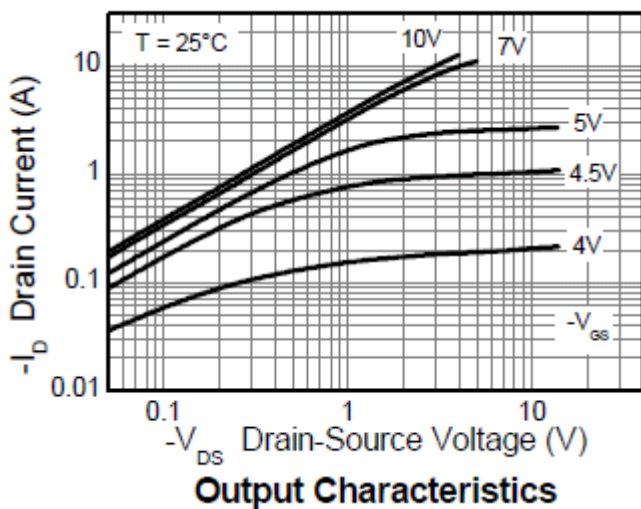
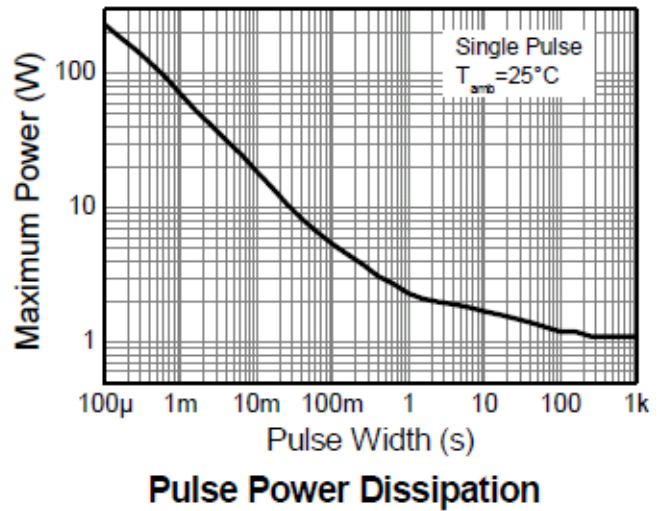
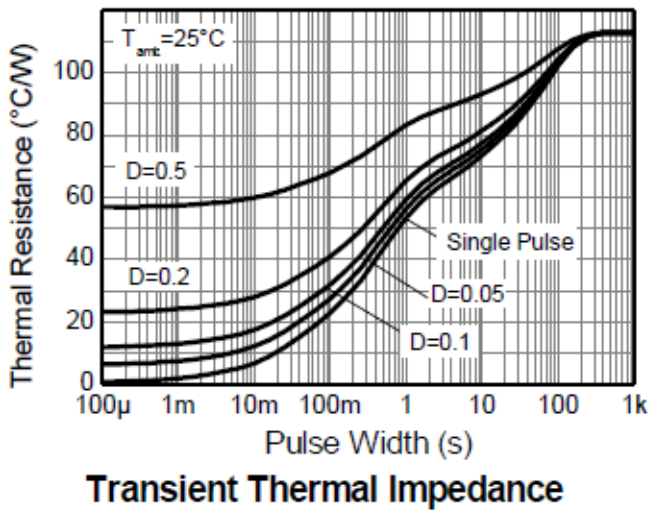
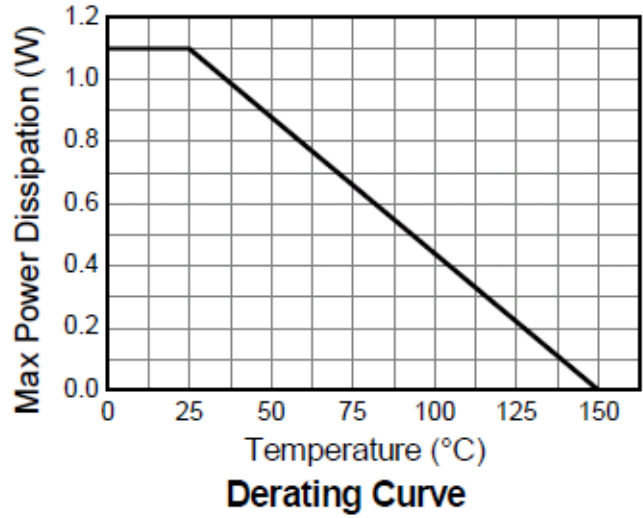
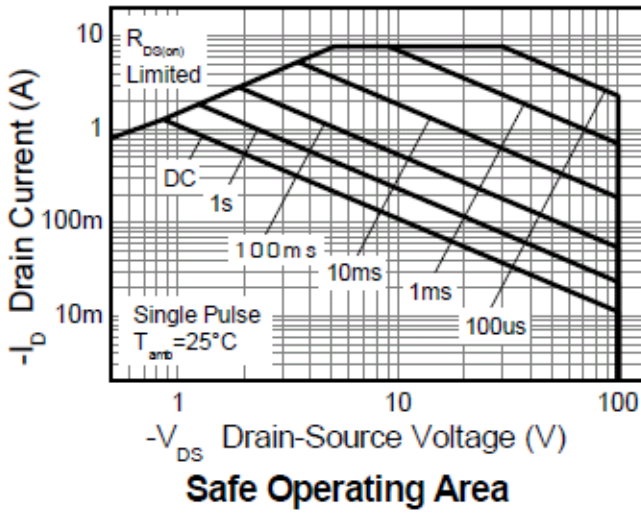
Note: (1) Measured under pulsed conditions. Width $\leq 300\mu s$. Duty cycle $\leq 2\%$.

(2) Switching characteristics are independent of operating junction temperature.

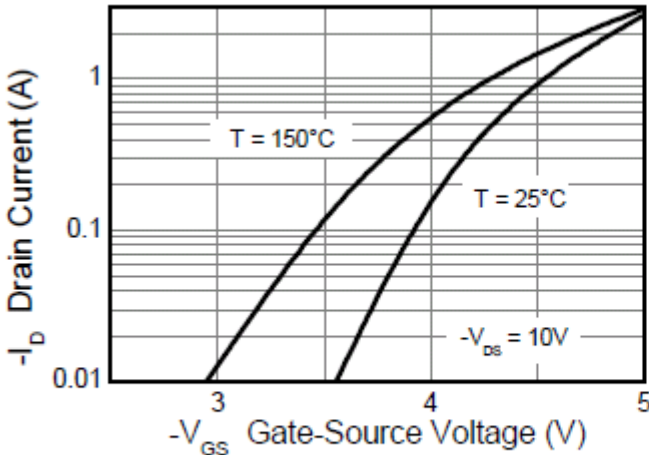
(3) For design aid only, not subject to production testing.

HIGH VOLTAGE MOSFET (P-CHANNEL)

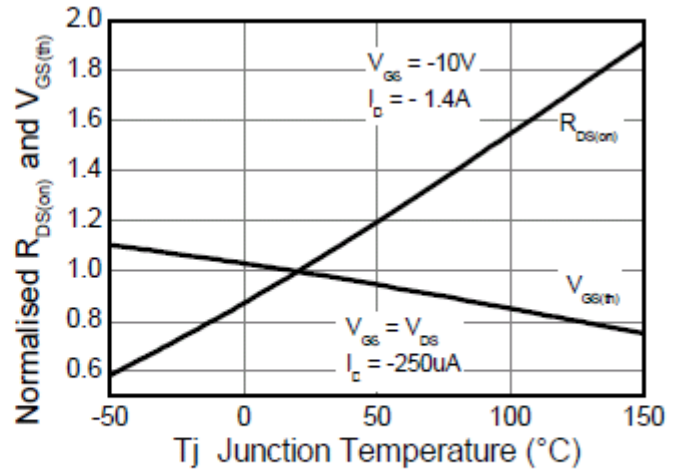
Typical Characteristics



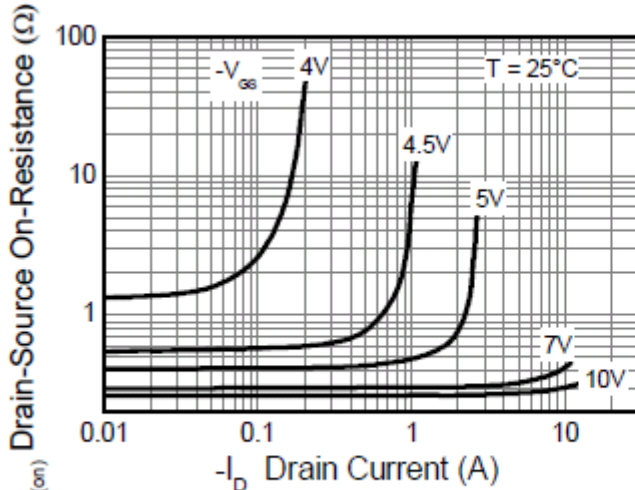
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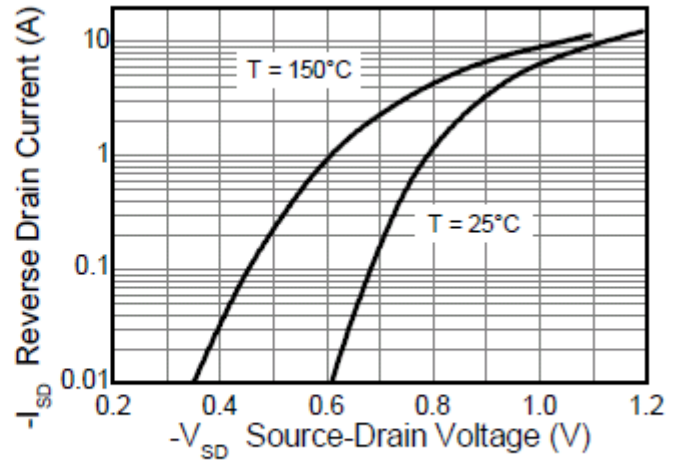
Typical Transfer Characteristics



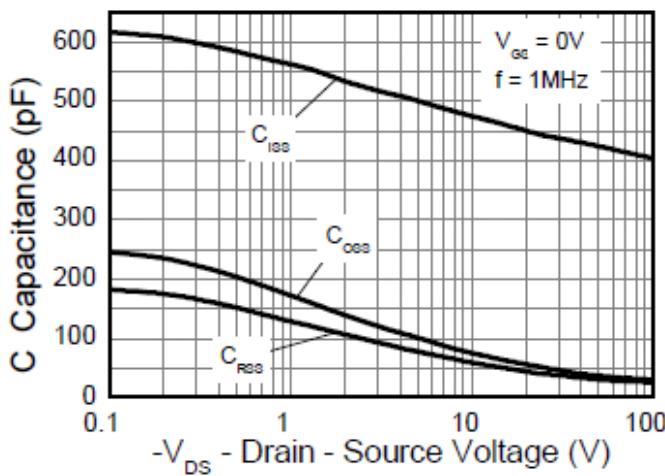
Normalised Curves v Temperature



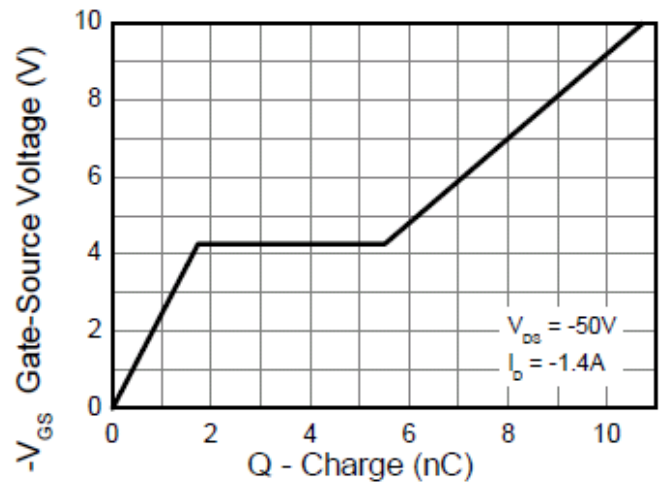
On-Resistance v Drain Current



Source-Drain Diode Forward Voltage



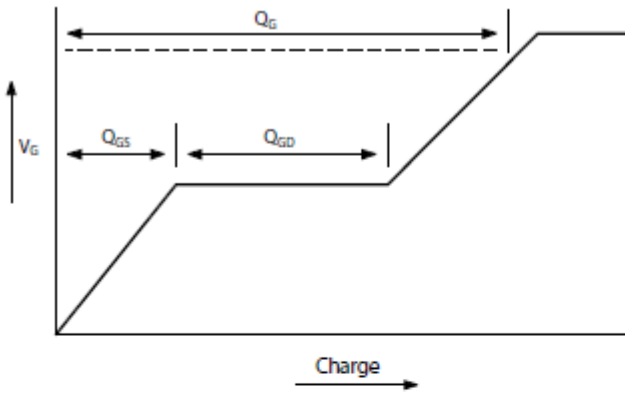
Capacitance v Drain-Source Voltage



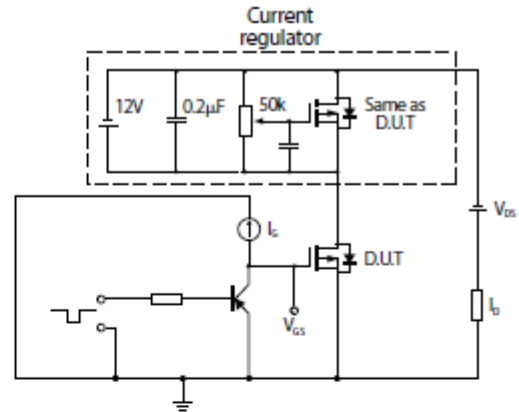
Gate-Source Voltage v Gate Charge

HIGH VOLTAGE MOSFET (P-CHANNEL)

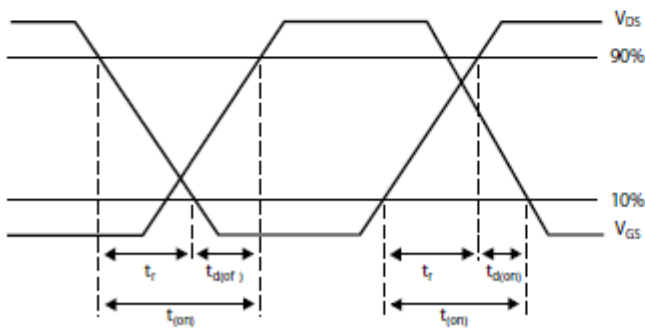
Test Circuits



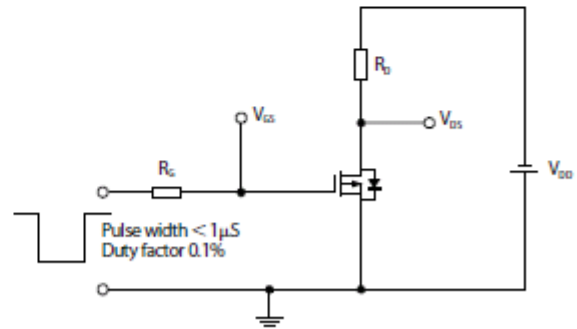
Basic gate charge waveform



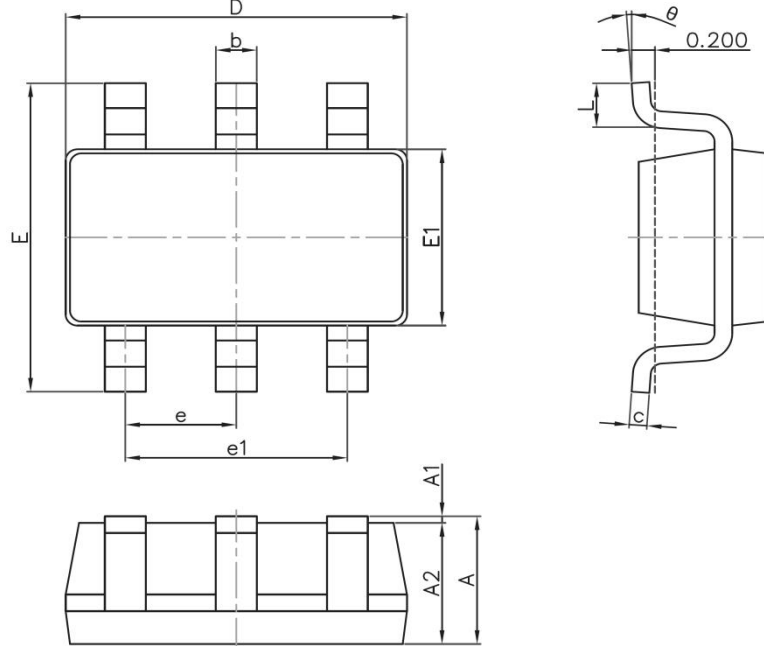
Gate charge test circuit



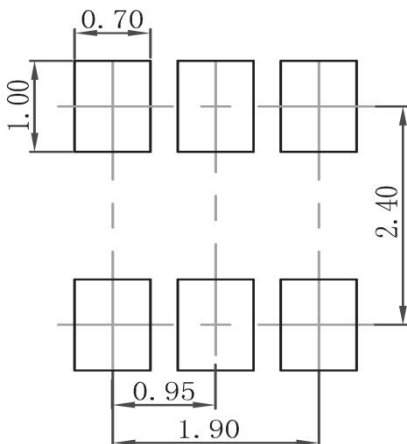
Switching time waveforms



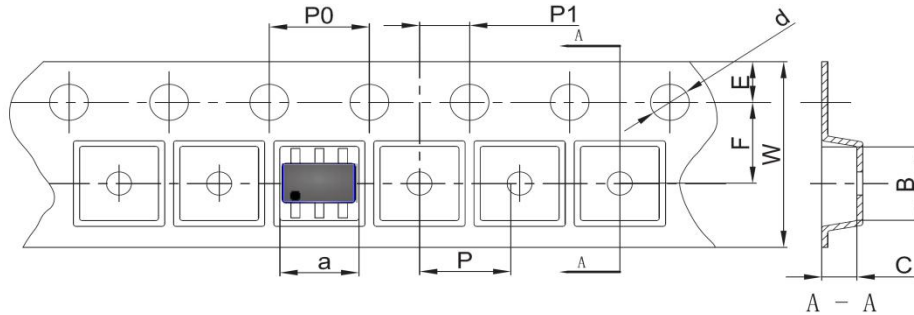
Switching time test circuit

HIGH VOLTAGE MOSFET (P-CHANNEL)
SOT-23-6 Package Outline Dimensions


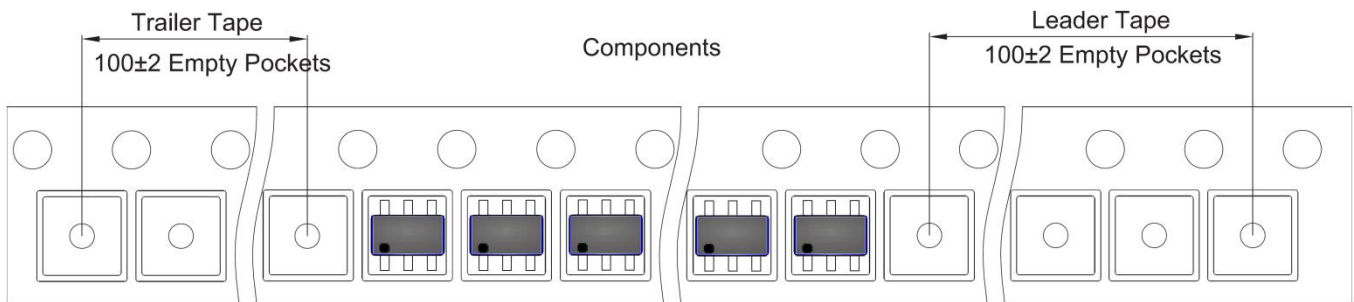
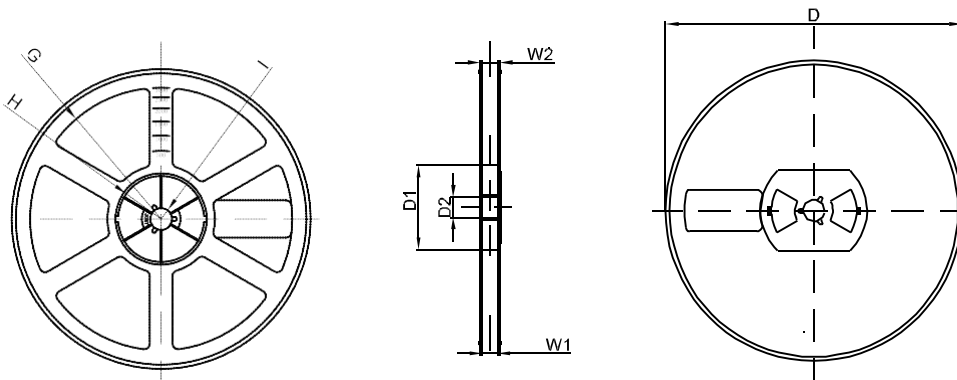
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.45	0.035	0.057
A1	0.00	0.15	0.000	0.006
A2	0.90	1.30	0.035	0.051
b	0.35	0.50	0.014	0.019
c	0.09	0.20	0.004	0.008
D	2.80	3.00	0.110	0.118
E	2.60	3.00	0.102	0.118
E1	1.50	1.75	0.059	0.069
L	0.10	0.60	0.004	0.024
e	0.95 REF		0.037 REF	
e1	1.90 REF		0.075 REF	
θ	0°	10°	0°	10°

SOT-23-6 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

HIGH VOLTAGE MOSFET (P-CHANNEL)
SOT-23-6 Tape and Reel
SOT-23-6 Embossed Carrier Tape


DIMENSIONS ARE IN MILLIMETER										
TYPE	a	B	C	d	E	F	P0	P	P1	W
SOT-23-6	3.17	3.23	1.37	Ø1.55	1.75	3.50	4.00	4.00	2.00	8.00
TOLERANCE	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

SOT-23-6 Tape Leader and Trailer

SOT-23-6 Reel


DIMENSIONS ARE IN MILLIMETER								
REEL OPTION	D	D1	D2	G	H	I	W1	W2
7" DIA	Ø180	60.00	13.00	R78	R25.60	R6.50	9.50	13.10
TOLERANCE	±2	±1	±1	±1	±1	±1	±1	±1