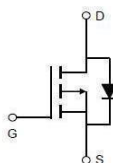
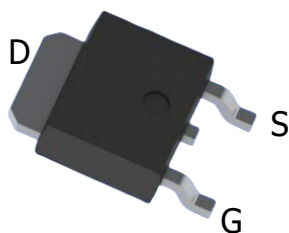


P-Channel Advanced Trench MOSFET

MSR075P06D

TO-252



V_{DS}	-60	V
$R_{DS(on), TYP @ V_{GS} = -10V}$	65	mΩ
I_D	-18	A

Features

- Advance high cell density Trench technology
- Low $R_{DS(ON)}$ to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance

Applications

- MB/VGA Vcore
- Server power
- SMPS 2nd Synchronous Rectifier
- BLDC Motor driver

Maximum ratings, at $T_A = 25^\circ\text{C}$, unless otherwise specified

Absolute Maximum Ratings

PARAMETERS/TEST CONDITIONS	SYMBOL	LIMITS	UNITS
Drain-Source Voltage ($V_{GS}=0V$)	V_{DS}	-60	V
Drain Current –continuous @25°C	I_D	-18	A
Drain Current –continuous @100°C	I_D	-11	A
Pulsed Drain Current ¹	I_{DM}	-72	A
Gate-Source Voltage ($V_{DS}=0V$)	V_{GS}	±20	V
Single Pulse Avalanche ²	E_{AS}	60	mJ
Operating Junction & Storage Temperature	T_J, T_{stg}	-55 to 150	°C
Lead Temperature (1/16" from case for 10sec.)	T_L	260	°C

Note:

1. Pulse width limited by maximum junction temperature.
2. EAS condition: $T_J = 25^\circ\text{C}$.

Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
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Static Electrical Characteristics @ $T_j=25^{\circ}\text{C}$ (unless otherwise stated)

$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-60	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-60V, V_{GS}=0V$	--	--	-1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	--	--	± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.2	-1.7	-2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	$V_{GS}=-10V, I_D=-10A$	--	65	75	m Ω
		$V_{GS}=-4.5V, I_D=-5A$	--	80	95	

Dynamic Electrical Characteristics @ $T_j = 25^{\circ}\text{C}$ (unless otherwise stated)

C_{iss}	Input Capacitance	$V_{DS}=-25V, V_{GS}=0V, f=1\text{MHz}$	--	525	--	pF
C_{oss}	Output Capacitance		--	80	--	pF
C_{rss}	Reverse Transfer Capacitance		--	3.9	--	pF
Q_g	Total Gate Charge	$V_{DS}=-10V, I_D=-5A, V_{GS}=-30V$	--	8.5	--	nC
Q_{gs}	Gate-Source Charge		--	1.8	--	nC
Q_{gd}	Gate-Drain Charge		--	1.5	--	nC

Switching Characteristics

$T_{d(on)}$	Turn-on Delay Time	$V_{GS}=-10V, V_{DS}=-30V, I_D=-5A, R_{GEN}=3\Omega$	--	10	--	ns
T_r	Turn-on Rise Time		--	6.0	--	ns
$T_{d(off)}$	Turn-Off Delay Time		--	40	--	ns
T_f	Turn-Off Fall Time		--	13	--	ns

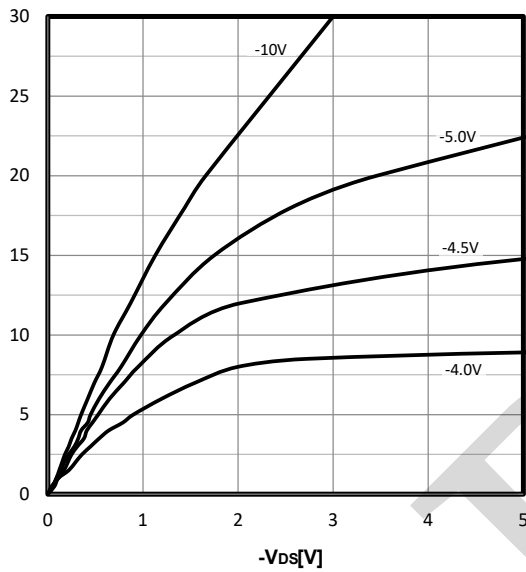
Source- Drain Diode Characteristics@ $T_j = 25^\circ\text{C}$ (unless otherwise stated)

I_s	Continuous Current		--	--	-18	A
V_{SD}	Forward Voltage	$V_{GS} = 0V$, $I_{SD} = -10A$	--	--	-1.2	V
T_{rr}	Reverse Recovery Time	$I_{SD} = -10 A$, $dI_F/dt = 100 A/\mu s$	--	50	--	ns
Q_{rr}	Reverse Recovery Charge		--	105	--	nC
T_{on}	Forward Turn-on Time	Intrinsic turn-on time is negligible(turn-on is dominated by L_S+L_D)				

Typical Performance Characteristics

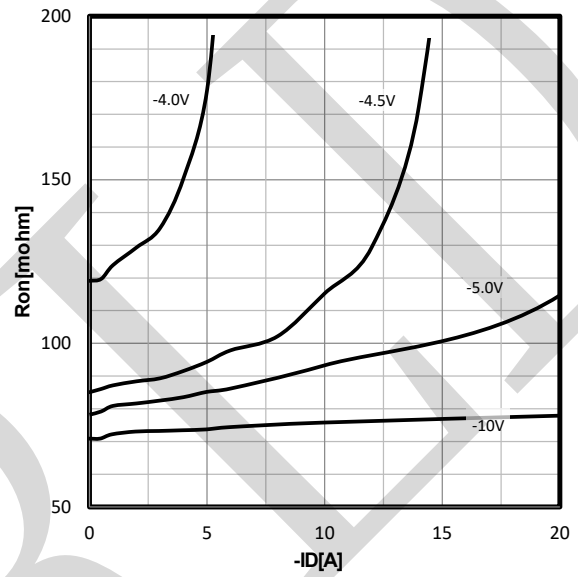
Typ. output characteristics

$$-I_D = f(-V_{DS})$$



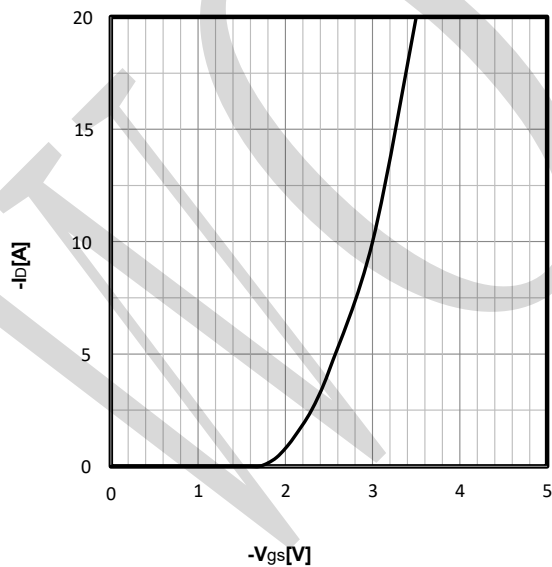
Typ. drain-source on resistance

$$R_{DS(on)} = f(-I_D)$$



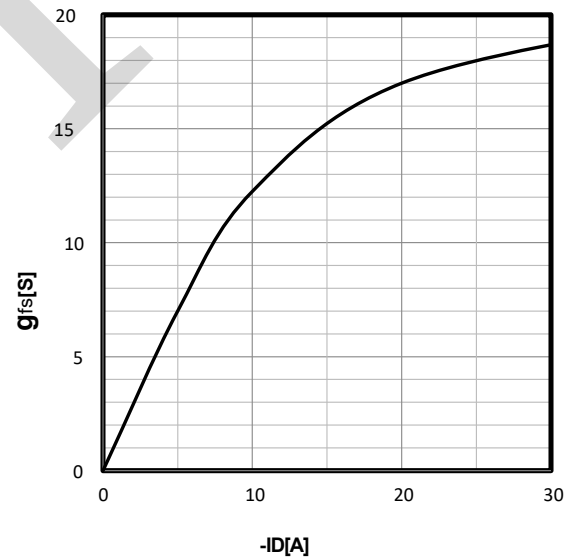
Typ. transfer characteristics

$$-I_D = f(-V_{GS})$$



Typ. forward transconductance

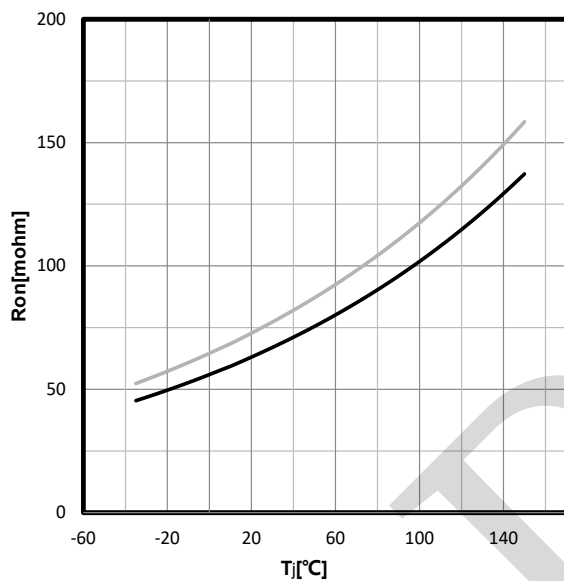
$$g_{fs} = f(-I_D)$$



Typical Performance Characteristics

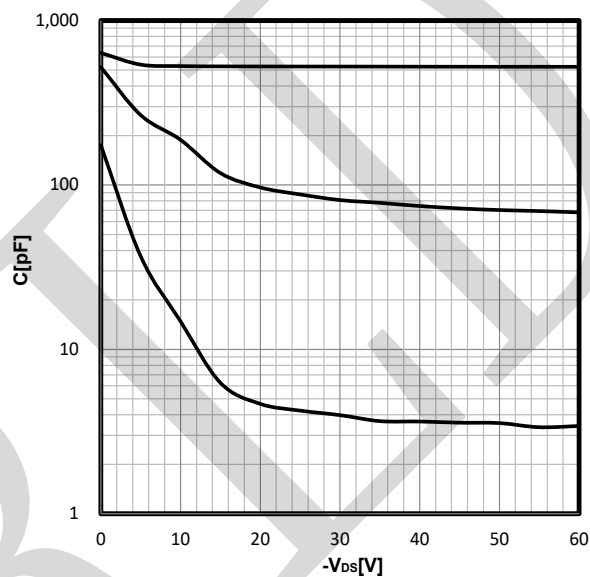
Drain-source on-state resistance

$R_{DS(on)} = f(T_j)$; $I_D = -5.0A$; $V_{GS} = -10V$



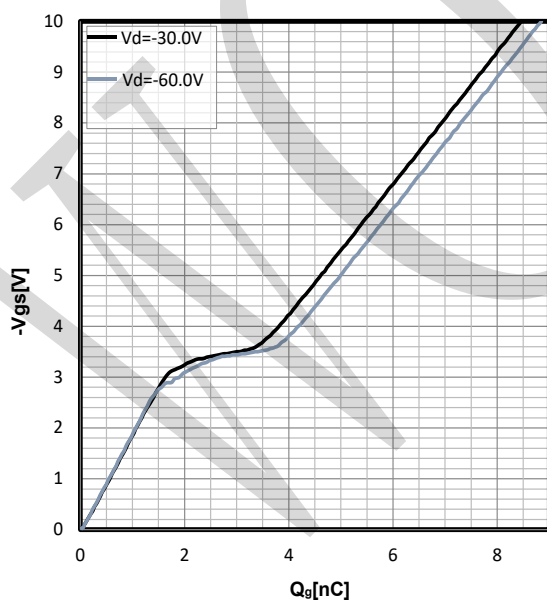
Typ. capacitances

$C = f(-V_{DS})$; $V_{GS} = 0V$; $f = 1MHz$



Typ. gate charge

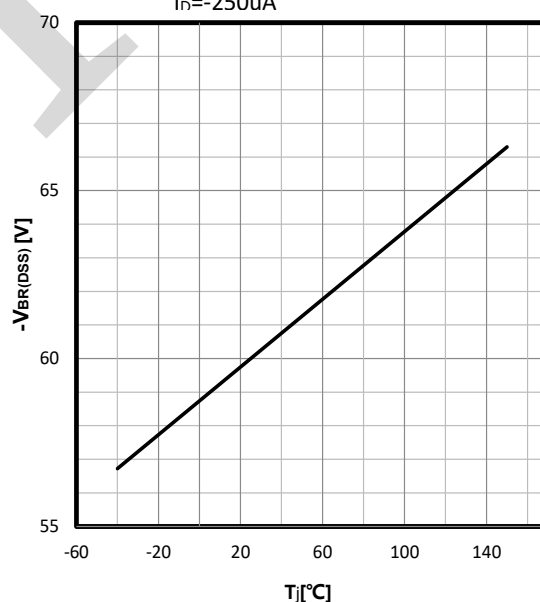
$-V_{GS} = f(Q_{gate})$; $I_D = -5A$



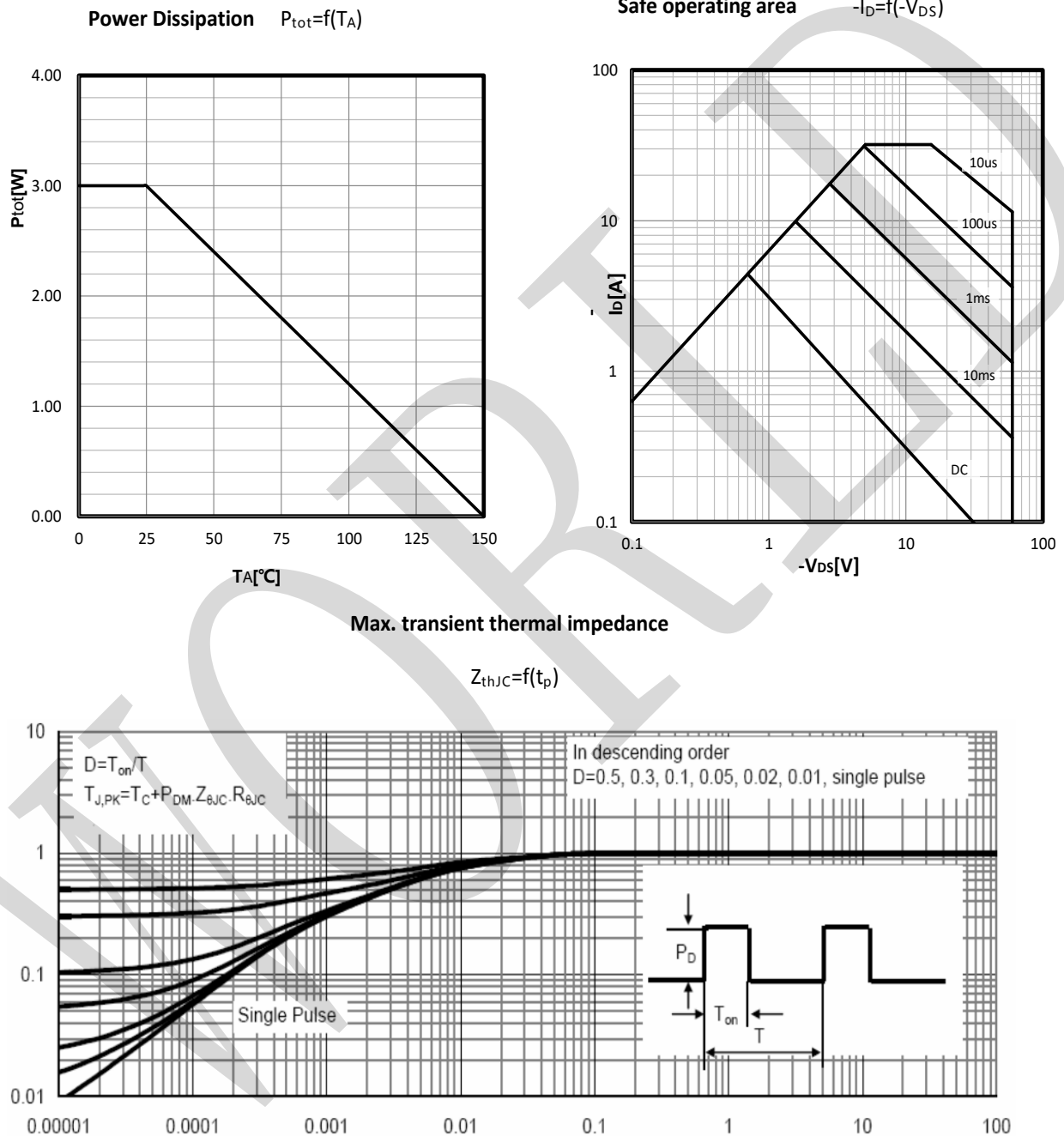
Drain-source breakdown voltage

$-V_{BR(DSS)} = f(T_j)$;

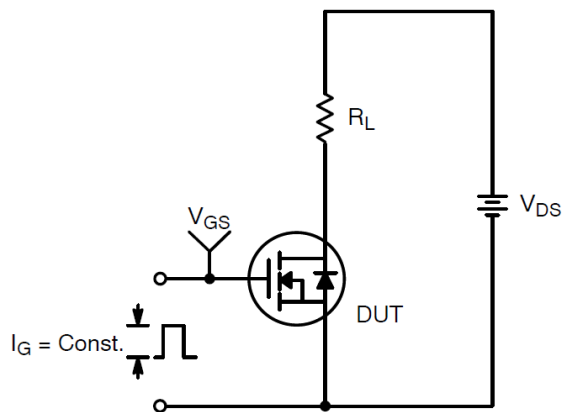
$I_n = -250uA$



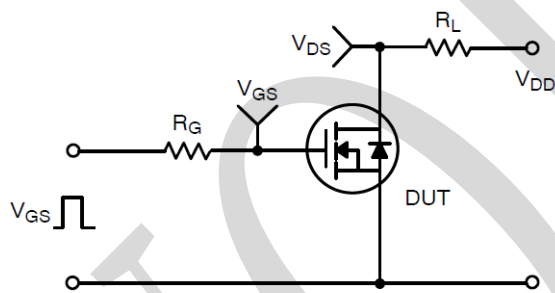
Typical Performance Characteristics



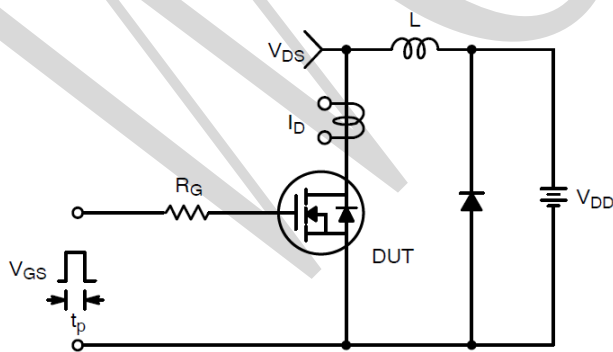
Test Circuit and Waveform:



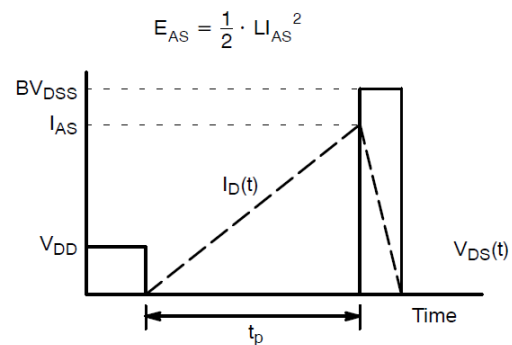
Gate Charge Test Circuit & Waveform



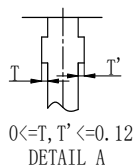
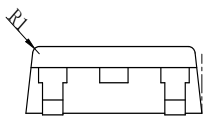
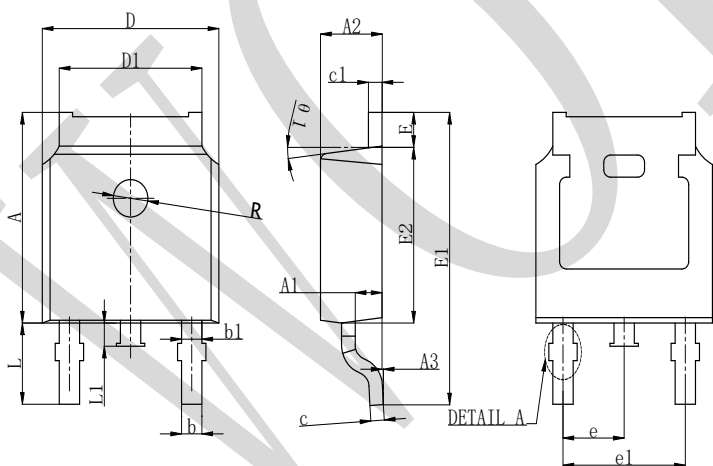
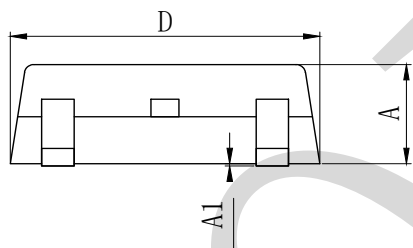
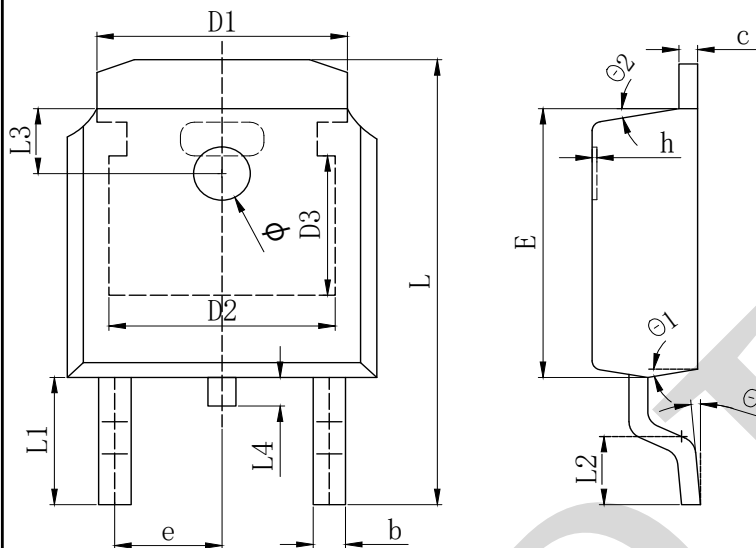
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



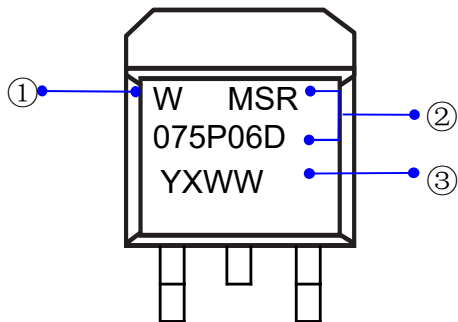
PACKAGE OUTLINE DIMENSIONS



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c (电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166 REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
Φ	1.100	1.200	1.300
θ	0°		8°
θ 1	9° TYP		
θ 2	9° TYP		

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	7.050	7.100	7.150
A1	0.960	1.010	1.060
A2	2.250	2.300	2.350
A3	0.000	0.050	0.100
b	0.760REF.		
b1	1.000REF.		
c	0.508REF.		
c1	0.508REF.		
D	6.550	6.600	6.650
D1	5.220	5.320	5.420
E	0.950	1.000	1.050
E1	9.700	9.900	10.100
E2	6.050	6.100	6.150
e	2.286BSC		
e1	4.572REF.		
L	2.650	2.800	2.950
L1	0.700	0.800	0.900
θ 1	7° REF.		
R	1.300REF.		
R1	0.250REF.		

Marking Information



①W : Company's trademark

②Product model : MSR075P06D

③PDC information :

Y X WW

WW:Week code(01 to 53)

X:Internal identification code

Y:Year code(ex:0=2020)